Technical COMMUNICATION
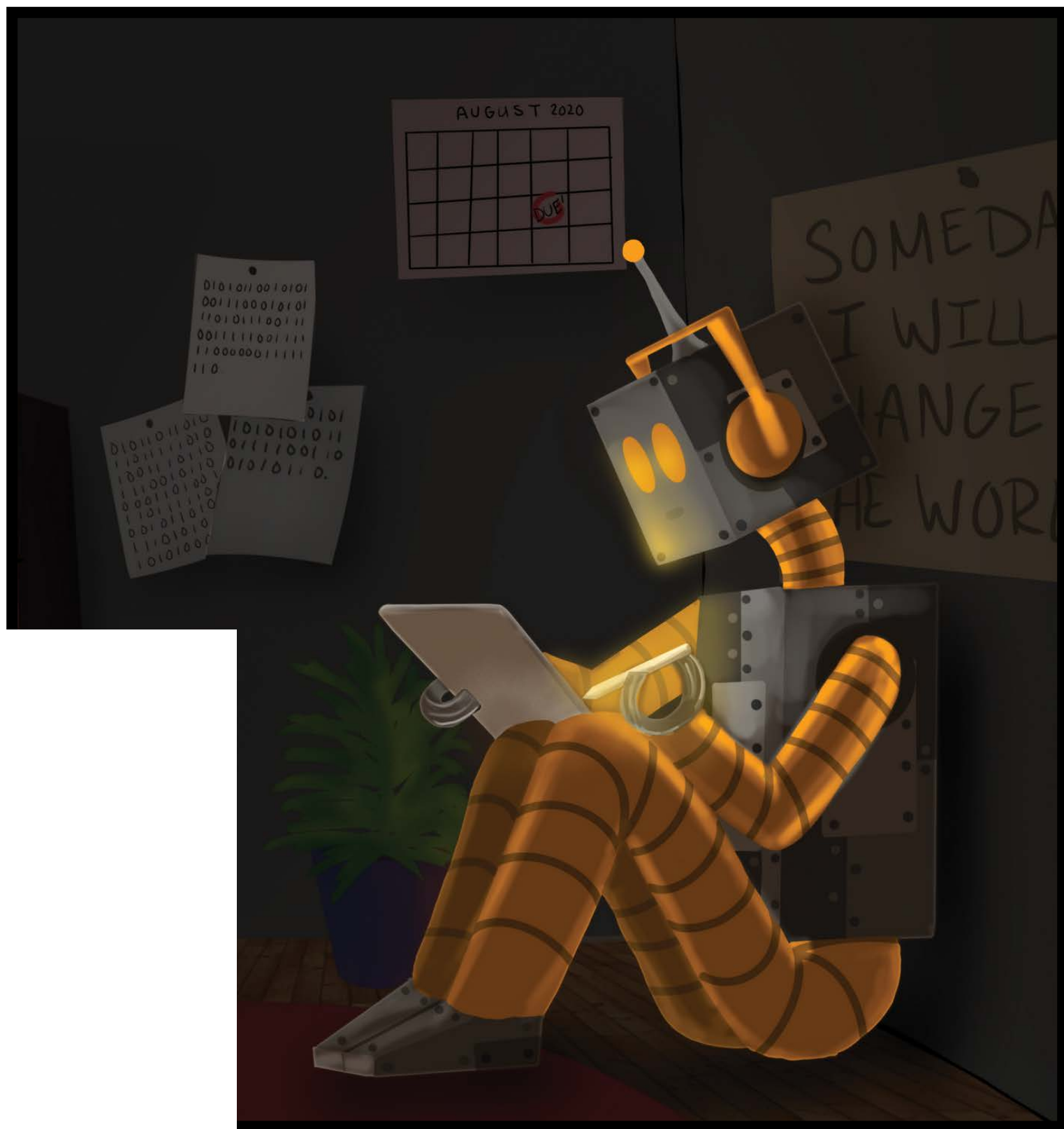
Journal of the Society for Technical Communication

Society for Technical Communication

What is a technical communicator? Technical communicators develop and design instructional and informational tools needed to ensure safe, appropriate, and effective use of science and technology, intellectual property, and manufactured products and services. Technical communicators combine multimedia knowledge and strong communication skills with technical expertise to provide education across the entire spectrum of users' abilities, technical experience, and visual and auditory capabilities. For more information visit www.stc.org/about-stc/defining-technical-communication.

The Society for Technical Communication is the largest association of technical communicators in the world. STC is currently classifying the Body of Knowledge for the field and communicating the value of technical communication. Its volunteer leadership continues to work with government bodies and standards organizations to increase awareness and accurate perception of technical communication. Membership is open to all with an interest in technical communication. Visit the STC website (www.stc.org) for details on membership categories, fees, and benefits.

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About the Journal

Technical Communication is a peer-reviewed, quarterly journal published by the Society for Technical Communication (STC). It is aimed at an audience of technical communication practitioners and academics. The journal's goal is to contribute to the body of knowledge of the field of technical communication from a multidisciplinary perspective, with special emphasis on the combination of academic rigor and practical relevance.

Technical Communication publishes articles in five categories:

- Applied research – reports of practically relevant (empirical or analytical) research
- Applied theory – original contributions to technical communication theory
- Case history – reports on solutions to technical communication problems
- Tutorial – instructions on processes or procedures that respond to new developments, insights, laws, standards, requirements, or technologies
- Bibliography – reviews of relevant research or bibliographic essays

The purpose of Technical Communication is to inform, not impress. Write in a clear, informal style, avoiding jargon and acronyms. Use the first person and active voice. Avoid language that might be considered sexist, and write with the journal's international audience in mind.

Our authority on spelling and usage is The American Heritage Dictionary, 4th edition; on punctuation, format, and citation style, the Publication Manual of the American Psychological Association, 6th edition.

Manuscript Preparation and Submission

Submitting a manuscript to Technical Communication for review and possible publication implies that its submission has been approved by all authors, researchers, and/or organizations involved, that the manuscript (or a substantial portion) has not been published before, and that the manuscript is not under review elsewhere.

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A Privilege to Share

Editing this journal for the Society for Technical Communication has been a great privilege. I knew it would be at the time I applied for the job six years ago. I realized it would be a precious opportunity to influence the direction of research in the field and to cultivate a supportive environment for the new as well as experienced scholars engaged in that research. I never anticipated that I would enjoy the position as thoroughly as I do.

In taking on the job, I decided to preserve the personal interaction with authors and reviewers that has been a positive but time-intensive tradition of the journal. Authors submit their manuscripts by e-mail, and I acknowledge receipt by e-mail, offering my thanks for the submission and explaining the 30-day deadline for reviews. I thereafter immediately anonymize the manuscript, identify three suitable reviewers, solicit the reviewers by e-mail, distribute the manuscript to the reviewers along with the journal's criteria for evaluation, and await the reviews. From time to time, I do find it necessary to issue reminders to reviewers, but their comments almost always prove perceptive, meticulous, incisive, and judicious. As soon as I receive all the reviews, I compile their comments in a report to the author with my decision about the manuscript: accept (a rarity), accept with revisions, revise and resubmit (a regularity), or reject. I also report this decision to the reviewers and share their comments on the manuscript, allowing every reviewer to examine all the advice the author was given

about possible revisions to the manuscript and to take note of variations in the evaluations. If the author submits a revision, I e-mail the reviewers again—this time with the anonymized revised manuscript and a copy that highlights the changes from the original version. We cycle through this review process until the reviewers and I are satisfied that the manuscript is ready for publication or the author decides to pull the manuscript from consideration (also a rarity).

After a manuscript is accepted for publication, the journal's two editorial assistants assume their responsibilities. A genuine thrill of the job has been the opportunity to work with two exceptional graduate students from Texas Tech University's Ph.D. program in Technical Communication and Rhetoric, Heidi Everett and Sarah Robblee. The two have continued in their position following completion of their degrees and we have composed a fine-tuned editorial circle. Sarah copyedits the accepted manuscripts for each issue, corresponds with the authors about their copyedited manuscripts, and passes the author-approved copyedited manuscripts to Heidi. Heidi compiles the manuscripts for the design and production process, and she distributes the resulting page proofs to the authors. Heidi also distributes the author's agreements (allowing STC to publish the manuscript) and receives and files the signed agreements. She also reads the page proofs, checks the corrections from each author, and addresses issues

with low-resolution or ill-sized illustrations.

Meanwhile, Jackie Damrau puts together the book review section (about 20 reviews each issue) and Sean Herring (and, previously, Lyn Gattis) organizes the Recent & Relevant section that summarizes articles published in related journals. Their sections also pass through Sarah's copyediting and Heidi's page proof duties.

At the same time as I am managing manuscripts, I also coordinate the journal's cover competition. I issue the call for covers twice a year on pertinent e-mail lists with periodic reminders. I receive the submissions, thank the artists, pass the illustrations to Michael Opsteegh and the international jury he chairs, and report their choice of the winning illustration (and honorable mentions) to all of the participating artists.

Important to this position has been the vigorous support of STC's Chief Executive Officer Liz Pohland and Publications Manager Sarah Black as well as the journal's Editorial Advisory Board—Ramesh Aiyyangar, Thomas Barker, Michelle Corbin, Ray Gallon, Caroline Jarrett, Avon Murphy, Ginny Redish, Karen Schriver, and Kirk St.Amant. Their caring attention and acuity

keep the journal directed to rigor, relevance, and readability as we navigate changes in the field of technical communication and challenges in the world of published research.

The five studies in this issue reinforce the journal's reputation for clear, credible, striking, and innovative inquiry:

In "Content and Authorship Patterns in Technical Communication Journals (1996–2017): A Quantitative Content Analysis," Ryan K. Boettger and Erin Fries offer a longitudinal study of a random sample of 672 articles published across a period of 22 years in the five leading journals of the field (*Journal of Business and Technical Communication*, *Journal of Technical Writing and Communication*, *Technical Communication*, *Technical Communication Quarterly*, and *IEEE Transactions on Professional Communication*). The analysis identifies 15 prevailing topics but finds that articles about rhetoric, genre, pedagogy, and diversity exceed the number of articles about critical subjects like UX/usability, information management, design, style, and editing. Ryan and Erin recognize that this consistent research focus could indicate the stability of the field but also caution that a failure of journals in technical communication to publish on defining issues in the field could specify stagnation as well as encourage the intrusion of neighboring disciplines on this research territory.

In "The Profession of Technical Communication through the Lens of the STC India Chapter: Understanding Current Perspectives and Future Directions," Breeanne Matheson and Emily January Petersen report on their 32-question survey of 76 participants at the STC India 2017 Annual Conference. According to the answers in this survey, the participating technical communicators believe their greatest contribution to their organizations is through their writing (as opposed to usability testing, information design, etc.): This finding reinforces the essential position of language skills in the practice of the profession. The survey also indicates that, in spite of their high levels of education in technical and scientific fields and their experience in cross-cultural collaboration, technical communicators in India enjoy limited access to academic degree programs in technical communication: This finding points to serious opportunities for international cooperation in training and education.

In "A Scheme for Understanding and Writing Summaries," David Farkas integrates research in the psychology of text processing and in applied linguistics with a crucial insight: While summaries sometimes constitute a miniature version of the summarized text, quite often this intertextual relationship differs from the standard expectation. David brings forty years of experience as a teacher and technical communicator to a critical analysis of thousands of summaries appearing in a wide variety of documents. He finds 12 pertinent factors to consider in the writing of summaries (Purpose, Specification constraint, Reduction, Phrasing, Proportion and Exclusion, Structure, Placement, Addition, Authorship, Stance, Style, and Format) and offers a series of questions as a heuristic for teaching and practice.

In the "The Rhetoric of Kamikaze Manuals," Naoko Ozaki, Jillian Hill, and Mike Duncan examine translations of two 1945 military manuals from Imperial Japan in order to assess their relationship to instruction manuals and to explore kamikaze practice from a rhetorical perspective. This riveting and provocative case study offers a disturbing lesson in the power of instruction manuals. It finds that the kamikaze instructions achieved their nefarious objective through word choice (especially imperatives) and through illustrations (especially abstract images), disrupting rational thought and ethical deliberation, and making the act of suicide as a "living missile" epitomize the highest exercise of military discipline.

In "Fostering Industry Connections through Workplace-Situated Graduate Student Research," Julie Watts assesses the merits of the independent research (IR) project as a requirement for students in online master's degree programs in technical and professional communication. She reports on findings from focus groups and interviews with faculty; from surveys of students, alumni, and advisory board members; and from interviews with advisory board members employed in industry. This mixed-method investigation uncovers appreciation for the IR project's contribution to a student's academic and professional skills as well as readiness for on-the-job

research and communication duties. The study also finds noteworthy challenges in advising students, organizing resources, building peer-to-peer support, getting permission from industry for IR projects, and cultivating receptivity to IR recommendations.

Serving as editor of Technical Communication, as I noted, has been a privilege, but it is a privilege to be shared instead of hoarded, and I believe five years as editor is appropriate time in this job. Journals thrive on periodic change and are invigorated by the new ideas and policies that a new editor puts in operation. I know the journal and the research in the field

will take exciting directions in the coming years.

I hope that sooner or later we focus research efforts on the gun industry, on the efficacy (or inefficacy) of its operating instructions, and on the legal and ethical responsibilities of gun ownership and of gun manufacturing and marketing. The risks, fatalities, and injuries associated with guns as well as the international scope and extraordinary resources of the industry make the scarcity of related research altogether surprising. I hope that we also seize opportunities for technical communicators to bring clarity and logic to fractious discussions of

climate change, immigration, racial disparities, and income inequality. And, obviously, we must intensify investigations of theories and practices that yield clear, candid, and consistent communication about epidemics. If we hesitate to examine provocative research topics with the unique critical skills we possess, it will be to the detriment of the field in which we operate and to the peril of the world in which we live.

I know that technical communicators make important contributions through their research to their organizations and to their communities, and I believe *Technical Communication* is a vital resource in this pursuit.

On the Cover

ARTIST'S NOTES

I used Procreate to make an illustration of a robot writing in binary on an iPad. I liked the idea of humanizing the robot, so he is handwriting his code, not printing it or typing it. I also thought it may be cool to give him interesting things like a plant or the poster that says "SOMEDAY I WILL CHANGE THE WORLD" because it makes him look funnily empathetic for a robot.

ABOUT THE ARTIST

Brandi Mills is an undergraduate student at Eastern Kentucky University. She is studying English with a focus on education. Brandi is passionate about graphic design and creating recognizable work that connects to broad audiences. She is available at brandi_mills65@mymail.eku.edu.

Honorable Mention
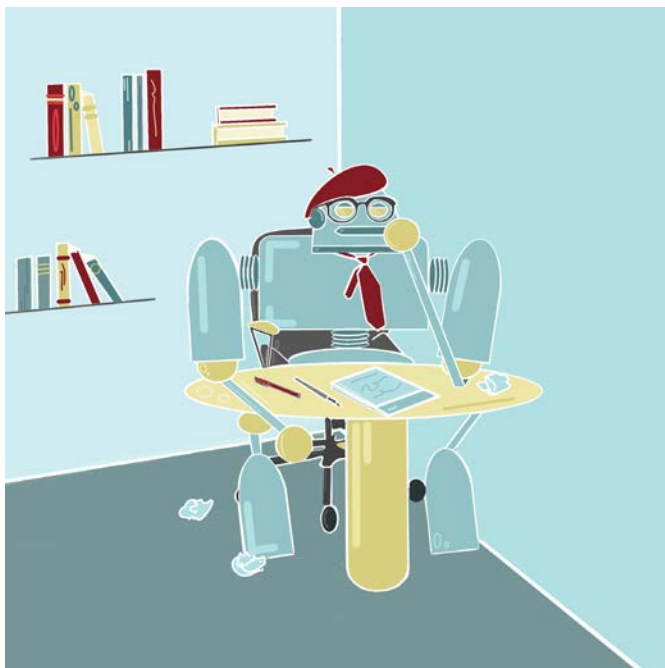
ARTIST'S NOTES

Graphic design is the meshing of the mechanical with the creative and that is how I chose to interpret the prompt, writing for robots. We think of technology devoid of the creative, but now it's used as a conduit of creation. Therefore, I aimed to create a robot that was clearly feeling. He's leaned in an organic position. He wears an outfit we associate with an artist. I tried to incorporate contrast visually and thematically.

ABOUT THE ARTIST

Emily Smith is an undergraduate student at Eastern Kentucky University. There she studies English and Spanish. Visual design is her favorite way to spend her free time while adding meaning and beauty in her life. She is available at emmysmith22@icloud.com.

Content and Authorship Patterns in Technical Communication Journals (1996–2017): A Quantitative Content Analysis

By Ryan K. Boettger and Erin Friess

ABSTRACT

Purpose: The maturity of technical communication merits a comprehensive, longitudinal analysis of the content published in its leading journals and the scholars who produce this research. Although reflexive research is common in the sciences and social sciences, few studies have analyzed the body of research in technical communication. Clarity on content and authorship patterns can help position the field for future relevance and sustainability.

Method: We conducted a quantitative content analysis on 672 articles published in five leading technical communication journals from 1996–2017. Articles were coded on nine content variables related to primary topic, primary audience, and authorship. We subsequently conducted a correspondence analysis on the variables to identify how specific content areas associated with the journals.

Results: Content and authorship patterns were near identical to the patterns found in the field 30 years prior. The journals published content primarily focused on rhetoric, genre, pedagogy, and diversity. In contrast, field-defining topics—usability/UX, comprehension, design, and editing and style—appeared in the sample less than expected. A majority of research was single-authored and written by female first authors; further, a majority of the first authors had academic affiliations in the United States.

Conclusion: Scholars must consider if these content and authorship patterns are the products of deliberate choices and, if so, if this is the field's inevitable trajectory for the next 30 years. We argue that certain topics are being overproduced while other topics that established the field are being underproduced and, in some cases, being assumed by other disciplines.

Keywords: content analysis, correspondence analysis, research, technical communication, technical writing

Practitioner's Takeaway:

- *Technical Communication* (TC) statistically corresponded with content related to knowledge and information management and design. Overall, both topics appeared in the sample less frequently than expected. Other research topics; including editing, usability, and design; were also underrepresented throughout the sample, problematizing what research content practitioners have available to them.
- Compared to the other four journals, TC published the least amount of content directed toward academics. Instead, the journal's content focused on writers, managers, and designers.
- TC was one of three journals to statistically correspond with content written by multiple authors.

CONTENT AND AUTHORSHIP PATTERNS

BACKGROUND

State-of-the-discipline studies are common to many fields, including public administration (Lynn & Wildavsky, 1990), public policy (Bunea & Baumgartner, 2014), political science (Kacmar & Baron, 1999), group communication (Frey, 1994), and digital studies (Kirschenbaum & Werner, 2014). These periodic assessments identify the values, boundaries, and research priorities of a particular field over a designated timeframe.

Technical communication merits the same analysis as these other academic disciplines, particularly when it has been suggested that the field lacks a cohesive identity. Rude (2009) noted several reasons for the field's unformed disciplinary identity, including the placement of our programs (often in traditional English literature-based departments); how we distinguish our questions and methods from other, more established disciplines; and our relative newness as a legitimate academic discipline with its own interconnecting theories and practices (p. 177). In fact, technical communication has been described as a "young" discipline for at least the last 30 years (Blakeslee, 2009; Carver, 1998; Garrison, 2014; Haselkorn, 1997; Hayhoe, 2006; Wahlstron, 1988). This youth has enabled scholars to freeform their definition of *technical communication*, the content areas that merit investigation, and the methods used to expand its body of knowledge. Rude (2009) extended this observation, pointing out that scholars are often redefining, reenvisioning, or rethinking the field. The consistent use of the prefix *re* "implies an established identity that should now be modified, but it also reflects a failure to pin down the characteristics" (p. 188). As a result, technical communication is recognized for its diversity, but this diversity has proven "very difficult to define or to circumscribe" (Rainey, 1999, p. 524).

St. Amant and Melonçon (2016) recently argued that technical communication's inability to define itself has hampered its legitimacy. They described an incommensurability problem in which "nothing seems shared or common" and one that "undermines . . . our power to act, engage, and develop as a field" (pp. 3–4). They suggested that technical communication was "doom[ed] . . . to fail unless we can change the field's perspective of what we consider *common ground*" (p. 4). Rude (2009) raised similar concerns

years earlier, motivating her development of four areas of related research questions that could better define technical communication as well as distinguish its scholarship from other disciplines. These four areas included disciplinarity, pedagogy, practice, and social change (p. 176).

Disciplinarity—or, how shall we know ourselves?—is perhaps most relevant to this study, and the research focused on disciplinarity can take many forms. Most of the related technical communication scholarship focuses on research methods (e.g., Boettger & Lam, 2013; Lam & Boettger, 2017; Melonçon & St.Amant, 2018). Rude (2009) acknowledged the value of methods but cautioned that we borrow them from so many other disciplines that their study alone does not always reveal what is unique and disguisable to technical communication. Our study pivots from these methods-driven studies, but we use the results to complement our findings. Instead, we report both the content (or topic) and authorship patterns within technical communication journals over a 22-year period. Rude (2009) too wrote that the study of topics alone could offer little significance without the presence specific research questions; however, we argue that these analyses contribute a more holistic understanding of where technical communication has been, where the field is now, and where the field could go. Further, we believe the scholars who are studying these topics reflect how the field has developed and perhaps how it might need to be *re*defined.

To respond to these areas, we conducted a quantitative content analysis on a random sample of 672 articles published in the five leading technical communication journals from 1996–2017. This approach and the resulting data is a step toward determining what the field has published in recent decades. This current research aims to assess and contextualize the disciplinarity of the field (and, to a lesser extent, its pedagogy, practice, and social change) through an analysis of both the content of the research and the characteristics of the authors to better frame the field's "visibility, identity, status, and sustainability" (Rude, 2009, p. 207). To explore these issues, we designed the study to identify the primary content areas, authorship characteristics, and collaboration patterns within these journals over the last 22 years.

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LITERATURE REVIEW

State-of-the-discipline studies are a critical research component, as they afford the opportunity to assess the health of a field and to identify patterns for comparative assessments. Further, state-of-the-discipline studies that focus on content can identify what is of apparent value to the field. With relatively few publication outlets focused exclusively on technical communication, the content of the research journals is an argument as to what is of value to the field. At present, our five leading journals typically publish 4–6 pieces of scholarship over the course in each of their four issues every year. This only allows 80–100 opportunities to address the content demands and alignment issues that are vital to the future of technical communication.

Additionally, state-of-the-discipline studies that investigate authorship characteristics such as gender and professional affiliation can ascertain the degree to which publications align with a field's claims of diversity (Eigenberg & Whalley, 2015; Fox et al., 2016; Gomes et al., 2016; Raptis, 1992; Siddiqui, 1997). Understanding a field's collaborative patterns can frame arguments for the acceptance of collaborative work to promotion and tenure boards who, in some disciplines, have favored sole-authored work over collaborative pursuits (Abbasi et al., 2012; Ezema & Asogwa, 2014; Katz & Martin, 1997; Perianes-Rodríguez et al., 2010). However, in technical communication, little research has analyzed the content areas (or the topics) and authorship characteristics of the field's research.

Technical communication scholars have only recently begun to reflect on its existing body of research, in part because the field's age did not provide a sufficient amount of longitudinal data. Current studies typically focus on research methods (Boettger & Lam, 2013; Brammer & Galloway, 2007; Melonçon & St.Amant, 2018). A recent study reported that 37% of articles published in the five leading technical communication journals over a five-year period were empirical (Melonçon & St.Amant, 2018). This study built from an early definition of empirical research, which describes or measures an observable phenomenon in a systematic way (MacNealy, 1999). The coding for this current article also applied this definition. Further, almost 60% of this empirical research was published in either *Transactions on Professional Communication or Technical Communication*. These results are potentially

relevant to the present study as both journals are affiliated with professional organizations and associated with content that addresses practitioner audiences (Smith, 2000a, 2000b). Similarly, specific content areas are associated with specific research approaches. Scholarship on collaboration and usability/UX were typically empirical, whereas scholarship on rhetoric, pedagogy, and genre were typically non-empirical (Lam & Boettger, 2017).

The content-related studies (studies that assess what areas or topics technical communication covers) produced in technical communication can typically be organized into two categories. The first encompasses a collection of self-reflective studies conducted as integrated literature reviews or anecdotal assessments (Brammer & Galloway, 2007; Fine, 1996; Forman, 1998; Malone, 2007; Rogers, 1995). Although these studies have offered focused examinations into specific content areas and phenomena, they have often done so without citation analyses, scientometrics, or other rigorous and replicable means for assessment. The second category focuses on technical communication doctoral research. Two studies have examined the types of doctoral research produced from 1965–1990 and 1989–1998, respectively, and found emphasis on pedagogical, rhetorical, and compositional areas (Rainey, 1999; Rainey & Kelly, 1992). Additionally, Cook et al. (2003) conducted a survey in which recent technical communication doctoral graduates self-reported the topics of their dissertation research; they found that rhetoric, culture, and pedagogy were among the most reported content areas. The results from these latter studies inform our own analysis as these doctoral students were likely new tenure-track researchers during our 22-year time period.

The field's most longitudinal examination of journal content remains the citation analyses by Smith (2000a, 2000b). Smith conducted a citation analysis on 10 years' worth of technical communication publications (including the same five journals analyzed in the present study) and found that the content areas were "broadly identified as professional issues (defining technical communication, pedagogy, and research methods), rhetoric and the rhetorics of communities, document design and technology issues, and workplace communication" (p. 427). Smith's analysis also noted content differences among the five journals. *Technical Communication Quarterly* and *Journal of Business and*

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Technical Communication were identified as the leading publications for authors with academic affiliations as well as the forums for the field's more theoretical discussions. As noted earlier, TPC and TC both associated with scholarship from the point of view of the practitioner. TPC also associated with research focused on communication with subject-matter experts and TC associated with research on design. Additional rigorous (and contemporary) research on technical communication content areas are needed to enable a broader understanding of what, exactly, technical communication currently is to its scholars.

State-of-the-discipline studies have also investigated the authorship characteristics (e.g., Gomes et al., 2016; Raptis, 1992; Siddiqui, 1997) and collaborative patterns (e.g., Abbasi et al., 2012; Katz & Martin, 1997; Perianes-Rodríguez et al., 2010). These results summarize the professional and personal characteristics of a field's scholars as well as provide insight into the value of collaborative research and patterns, such as the frequency that advisees publish with their dissertation advisors.

Only a few technical communication studies have addressed authorship characteristics. The earlier cited survey of dissertation authors also examined the diversity of the authors and found that more women than men completed technical communication dissertations, and 93% of these authors self-identified their ethnicity as "White" (Cook et al., 2003). Of the 18 schools represented by the respondents, all were based in the US and all but two were large public institutions (i.e., more than 20,000 students). In a study of technical communication research journals (the same five journals reviewed in this present study), Smith's (2000a, 2000b) longitudinal citation analyses found that approximately one third of the data was produced by more than one author and that more scholarship was produced by males than females (Smith, 2000a, 2000b). Authorship statistics of TPC over a 25-year period found that about a third of the articles were written by two or more authors with collaborations trending upward longitudinally in their sample (Brammer & Galloway, 2007). A subsequent analysis of four technical communication journals over a five-year period found that approximately two thirds of the articles were produced by more than one author (Lam, 2014). As a contrast, authorship patterns in JBTC indicated that almost 80% of their publications were single-authored and 62% of the lead

authors were females (Burnett, 2003). These authorship patterns suggest variation among the five leading journals as well as trends that have developed over the last several decades. Additional rigorous research is needed to enable a broader understanding of who authors technical communication research and how those authorship characteristics align with technical communication's "growth area" of diversity (Johnson et al., 2018, p. xix).

Therefore, we continued to explore these issues through the following research questions:

RQ1. What are the primary content areas covered in technical communication journals, and who are the primary audiences that benefit most from this content?

RQ2. What are the authorship characteristics of these journal article writers?

RQ3. What are the collaboration patterns among authors? What patterns prevail in certain journals and on particular topics?

METHODS

Our primary method was content analysis. We define content analysis as "a research technique for making replicable and valid inferences from texts (and other meaningful matter) in the contexts of their use" (Krippendorff, 2012, p. 18). Content analysis has been modified for qualitative inquiry; however, our application is quantitative and meaning was identified through valid measurement rules and relational inferences via statistical methods (Boettger & Palmer, 2010; Neuendorf, 2016). The general framework for quantitative content analysis includes identifying the sample, developing a coding scheme, norming raters, and analyzing data.

The timeframe for this analysis began with content published in 1996, which is roughly when Smith (2000ab) concluded the timeframe for her bibliometric studies. We concluded the timeframe in 2017, which, at the time of coding, provided the latest complete volume of each journal. We analyzed content from five journals: *Journal of Business and Technical Communication (JBTC), Journal of Technical Writing*

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and Communication (JTWC), Technical Communication (TC), Technical Communication Quarterly (TCQ), and *IEEE Transactions on Professional Communication (TPC).* We selected these journals for analysis because they were all published for the entirety of the designated time period, were included in Smith's previous studies, and have been identified as the leading forums for technical communication scholarship (Boettger & Lam, 2013; Carliner et al., 2011; Lowry et al., 2007; Smith, 2000a, 2000b). The field has expanded its number of journals, and technical communication scholars published in other forums but focusing on the five leading journals provides the parameters necessary for longitudinal study.

Our sample included 672 articles published in five leading technical communication journals from 1996–2017. We began with 2,148 articles, or every peer-reviewed article published during the 22-year period. Each article was numbered in a MS-Excel spreadsheet, and we used the random number formula to identify the sample for analysis. The random selection of the sample retained the representative number of articles published by each journal. As an example, TC published 20.4% of the articles in the population

(n = 439), and the journal represented 19% (n = 127) of the present study's sample. The remaining sample included 112 articles from JBTC, 133 from JTWC, 137 from TCQ, and 163 from TPC. We manually coded 31.3% of the corpus, which is slightly above the ideal sample size for yielding a 95% confidence level with a 3.5% margin of error.

We manually coded the sample on nine content variables: *journal, year, primary topic, primary audience, authorship, gender, affiliation type, geographic affiliation,* and *world region.* Variables were selected based on their presence in previous studies in technical communication and related fields (Boettger et al., 2015; Boettger & Friess, 2016; Boettger et al., 2014; Boettger & Lam, 2013; Brammer & Galloway, 2007; Carliner et al., 2011; Lowry et al., 2007; Juzwik et al., 2006; St. Clair Martin et al., 2012; Tansey et al., 2012). Table I includes a description of each variable and its levels.

Operationalization best practices related to survey and experimental research also apply to measurement in content analysis. This includes the development of mutually exclusive coding categories where each recording unit fits into only one category on a given score dimension (Neuendorf, 2016). This practice

Table I. Variable and variable levels considered in the present study

Variable	Description
Journal	Recorded the forum of the article as JBTC, JTWC, TC, TCQ, or TPC.
Year	Recorded the year the article was published (e.g., 1996–2017).
Primary Topic	Classified the primary topic of each article as assessment, collaboration, communication strategies, comprehension, design, diversity, editing and style, genre, professionalization, knowledge and information management, pedagogy, research design, rhetoric, technology, or usability and user experience.
Primary Audience	Classified the primary audience who would most benefit from reading each article as academic, business owner, consultant, editor, general, manager, student, visual communicator, other, senior writer/content strategist, or writer/content developer.
Authorship	Classified the authorship of each article as single-, co-, or multi-authored.
Gender	Classified the first author as either female or male based on the pronouns used in the author's biography.
Affiliation Type	Classified the affiliation of the first author as academic or industry/government.
Geographic Affiliation	Classified the geographic affiliation of the first author as national or international.
World Region	Classified the world region of the first author as Africa/Middle East, Asia, Australia, Central and South America, Europe, or North America.

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enables different coders to arrive at the same results and provides a common instrument to facilitate data comparison across multiple studies. In fact, the codes developed by the researchers for this and earlier studies have also been applied by other researchers (e.g., Hannah & Lam, 2016).

Our codebook was finalized after 12 drafts and norming sessions with a separate sample and among three researchers. Previous research describes the development of these codebooks, particularly how we developed and refined the mutually exclusive codes for *primary topic* and *primary audience* codes (Boettger et al., 2015; Boettger & Friess, 2016; Boettger et al., 2014). For example, identifying mutually exclusive categories for *primary topic* proved challenging. We initially coded a small sample using four different schemas before arriving at the final approach. When our first codebook was developed, the classification scheme for the STC Body of Knowledge (and later applied in Carliner et al., 2011) was still evolving and contained several coding options. The large number of possible codes proved challenging to sort into mutually exclusive categories, norm across multiple raters, and analyze for noticeable patterns. We encountered similar issues with the coding scheme used by the eServer Technical Communication Library (tc.eserver.org). In addition, we considered the keywords that prospective authors choose to classify their submissions to journals using the ScholarOne Manuscript system (e.g., *audience analysis*, *linguistic research*, *listening persuasion/proposals*). We found these keywords proved helpful to each journal in identifying appropriate manuscript reviewers but more difficult to apply usefully and consistently to all the major journals in technical communication. In the end, our aim was to create a codebook that addressed the diversity of scholarship in the field across multiple publication venues.

We acknowledge that a piece of technical communication scholarship does not always neatly fit into a single category, but the abstraction and isolation of variables is a vital step to any scientific method. No one study can address every nuance of a phenomenon; however, our results include a consistent application of codes that were developed with attention to validity and reliability. Therefore, these codes can be applied to other data samples for comparison, contributing to the growth rather than the stagnation of a particular research conversation.

For this study, we collapsed the earlier developed codes of gender and intercultural communication codes into a more encompassing diversity code. This update was in response to the focus on diversity and inclusion in recent technical communication scholarship. Twenty percent of the current sample was re-coded for inter-rater reliability. Agreement between the study's authors was 84.6% (using Krippendorff's alpha coefficient) and within the recommended range (Watt & van den Burg, 1995).

Data were analyzed with descriptive statistics, contingency table analyses, and correspondence analyses. Contingency table analyses correlate multivariate frequency distributions, allowing researchers to statistically compare distributions of non-numerical data. For this study, we ran a binomial, a type of contingency table analysis that tests the statistical significance of deviations from theoretically expected distributions in two categories. We also ran the chi-square test to test two-way table associations.

Correspondence analysis (or CA) is a geometric technique used to analyze multi-way tables containing some measure of correspondence between the rows and columns (Greenacre, 2007). The most useful component of CA is its ability to visually organize the data into central and peripheral instances. CA is not an inferential measure and does not determine statistical significance. Statistical output provides a chi-square value that reflects the overall interaction between the rows and columns, but the researchers must consult other statistical output to properly interpret the results. Throughout this paper, we only report CAs that had a significant chi-square value of ≤ 0.05, and, like previous researchers, we reviewed other output to determine between-variable relationships (e.g., Boettger & Friess, 2016; Boettger & Lam, 2013; Friess, 2018; Lam & Boettger, 2017).

RESULTS

The results are organized around the three research questions.

RQ1: Content and Audience
What are the primary content areas covered in technical communication journals, and who are the primary audiences that benefit most from this content?

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Primary topic

Overall, the journals published content primarily focused on rhetoric, pedagogy, and genre (see Table II). A contingency table analysis determined how evenly distributed the primary topics were across the journals. Our null hypothesis assumed that if all topics were evenly distributed, 44.8 articles on each topic would have appeared within the 22-year period. This number was derived by dividing the sample size by the number of primary topics (i.e., 672/15). As hypothesized, not every content area was equally represented in the journals, and it is this result that focuses much of our analysis. The far-right columns of Table II list the observed frequencies of the topics and the related *p*-values.

Articles on rhetoric, pedagogy, genre, and diversity appeared in the journals at a higher than expected frequency. In other words, these areas appeared significantly more often than 44.8 times in the sample. These topics comprised 49.4% of the overall sample and were dispersed in all five journals. Articles

on usability/UX, comprehension, knowledge and information management, research design, design, and editing and style appeared in the journals less frequently than expected. In other words, these areas appeared significantly less often than 44.8 times in the sample. The remaining five topics were not significantly distributed and, therefore, appeared within the journals as frequently as expected.

Primary topic and journal

A correspondence analysis (CA) identified a significant relationship between *primary topic* and *journal* ($\chi^2 =$ 171.005 p < 0.00). Seven associations were identified from the statistical output.

The strongest correspondence was between TCQ and rhetoric (see Figure I). TCQ published 42.4% of the rhetoric articles in our sample (see Table I). Next, TPC corresponded with collaboration and communication strategies. The journal published 52.8% and 40%, respectively, of the articles on both topics. JTWC corresponded with genre and pedagogy.

Table II. Frequencies and contingency table analysis results of *primary topic* and *journal*

Primary Topic	Journal					Frequency	*P* binomial
	JBTC	JTWC	TC	TCQ	TPC		
Rhetoric	26	15	9	39	3	92	0.00*
Pedagogy	14	19	7	24	27	91	0.00*
Genre	18	32	11	12	17	90	0.00*
Diversity	8	13	12	16	10	59	0.04*
Communication strategies	7	11	7	5	20	50	396
Professionalization	4	14	13	7	6	44	100
Technology	6	4	12	5	15	42	0.76
Collaboration	8	2	4	3	19	36	0.19
Assessment	5	3	11	9	5	33	0.07
Usability/UX	4	5	9	3	9	30	0.02*
Comprehension	3	5	9	3	8	28	0.01*
Knowledge management	3	0	9	4	11	27	0.00*
Research design	3	3	4	5	6	21	0.00*
Design	1	2	8	1	4	16	0.00*
Editing and style	2	5	2	1	3	13	0.00*
Grand Total	**112**	**133**	**127**	**137**	**163**	**672**	

*Significant at ≤0.05 α level

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The journal published 35.6% and 20.9%, respectively, of the articles on both topics. Finally, TC corresponded with knowledge and information management and design. The journal published 33.3% and 50%, respectively, of the articles on both topics. JBTC did not correspond with a primary topic.

Primary audience

The *primary audience* category was coded based on who would benefit most from reading the content rather than who was most likely to read it. Academic was identified as the most frequent primary audience,

accounting for 67.3% of the sample (see Table III). Writer/content developer was the next most frequent primary audience (9.9%), and the related content appeared most often in JTWC, TC, and TPC. The third primary audience was manager (8.5%) and the related content appeared most often in TC and TPC.

Primary audience and journal

A second CA identified a significant relationship between *primary audience* and *journal* (χ^2 = 219.02 p < 0.00). Four associations were identified based on the statistical output (see Figure II).
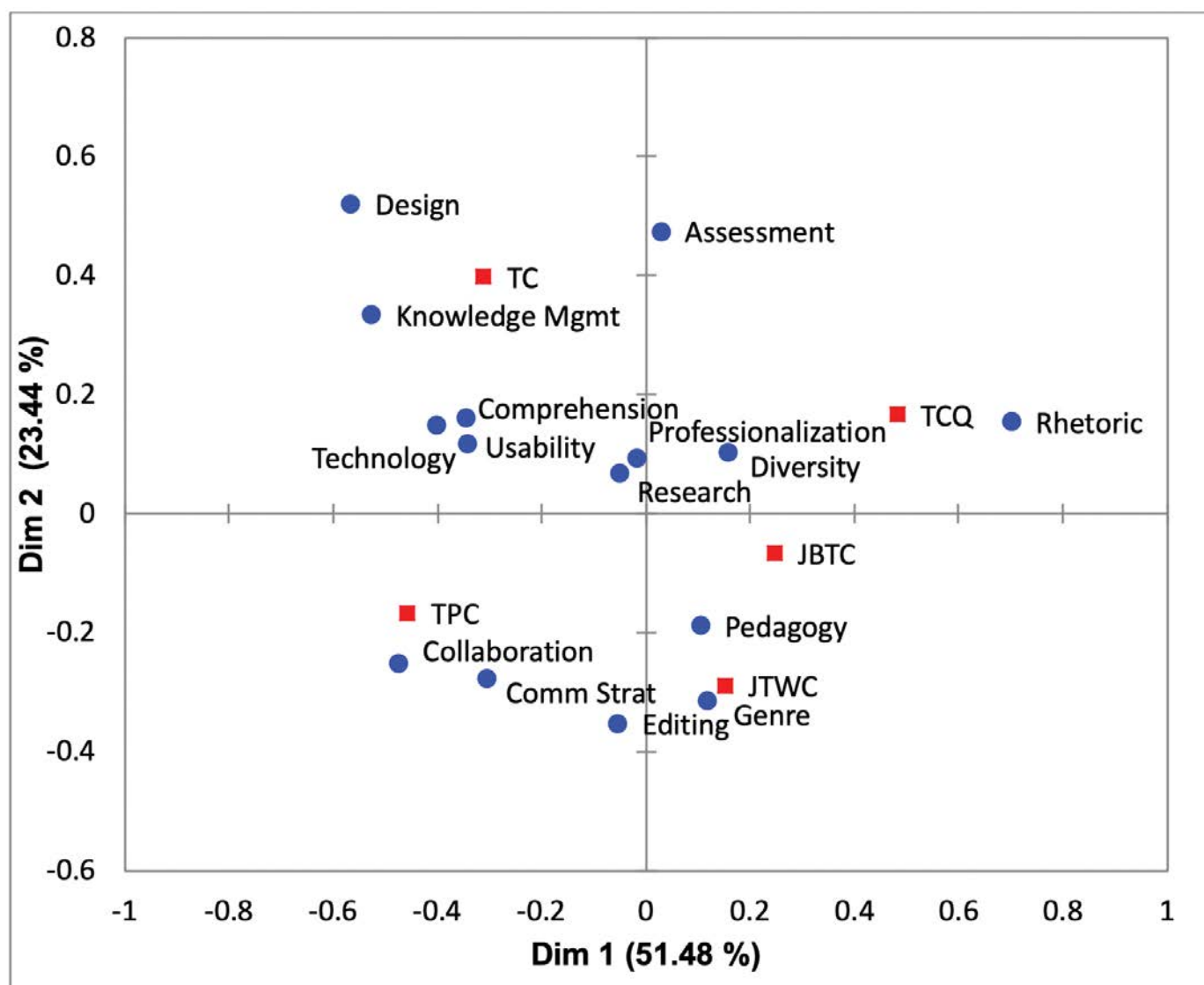

Figure I. Correspondence analysis between *journal* and *primary topic*. The eigenvalues for the first two dimensions are 51.48% and 23.44%, respectively, indicating that the visualization explains 74.92% of the variation (inertia).

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The strongest correspondence was between TCQ and the academic. As indicated in Table III, 93.4% of the content in the TCQ sample most benefitted this audience. Academic was the typical audience for all the journals; however, the frequency of TCQ articles differed from the other four journals. As a contrast, the JBTC, JTWC, TPC, and TC sample focused its content on academics 83.0%, 67.7%, 59.5%, and 34.7%, respectively, of the time. In addition, TC corresponded with the senior writer/content strategist and the visual communicator. The journal published 53.7% and 73.3%, respectively, of the content for both audiences. TPC corresponded with the manager and published 57.9% of the related content.

RQ2: Authorship Characteristics

What are the authorship characteristics of these journal article writers?

Authorship

Overall, 59.4% of the sample was single-authored, 26.5% was co-authored, and 14.1% was multi-authored (see Table IV). When we collapse the two latter categories, 40.6% of the sample was written by two or more authors. Three journals best reflected this overall authorship distribution. Results indicated that 42.5% and 57.1% of the content published in TC and JBTC,

respectively, was single-authored. TPC was the only journal that published more content by two or more authors (55.8%) than sole authors. Comparatively, authorship in JTWC and TCQ was imbalanced, and both journals published substantially more single-authored content (72.9% and 67.9%, respectively).

Gender

We coded the gender of the first author based on the pronouns used in the author-provided biography. If no biography was included in the article, we consulted the pronouns used in the author's institutional biography or LinkedIn profile. Overall, 50.7% of the first authors in the sample were coded as female. The JBTC, TCQ, and TPC sample included more female-first authors (61.6%, 53.3%, and 51.5%, respectively). The JTWC and TC sample included more male-first authors (57.9% and 53.5%, respectively). Results from a chi square test confirmed the overall gender distribution of first authors across journals was significant (χ^2 = 10.59, $p < 0.05$).

Further, the sample included 513 different first authors; 264 were coded as female and 249 were coded as male. Of the females, Natasha Jones was first author on the most articles (n = 5), followed by Kim Sydow Campbell, Nancy Coppola, Loel Kim, Carolyn Rude, and Elizabeth Tebeaux (n = 4 each). Of the males,

Table III. Frequencies of *primary audience* by *journal*

Primary Audience	Journal					Frequency
	JBTC	JTWC	TC	TCQ	TPC	
Academic	93	90	44	128	97	452
Writer/Content developer	7	20	19	4	17	67
Manager	4	3	16	1	33	57
Senior writer/Content strategist	6	1	22	1	11	41
General	0	14	8	1	1	24
Visual communicator	0	2	11	1	1	15
Editor	2	2	2	0	2	8
Other	0	1	3	1	0	5
Business owner	0	0	1	0	1	2
Consultant	0	0	1	0	0	1
Student	0	0	0	0	0	0
Grand Total	**112**	**133**	**127**	**137**	**163**	**672**

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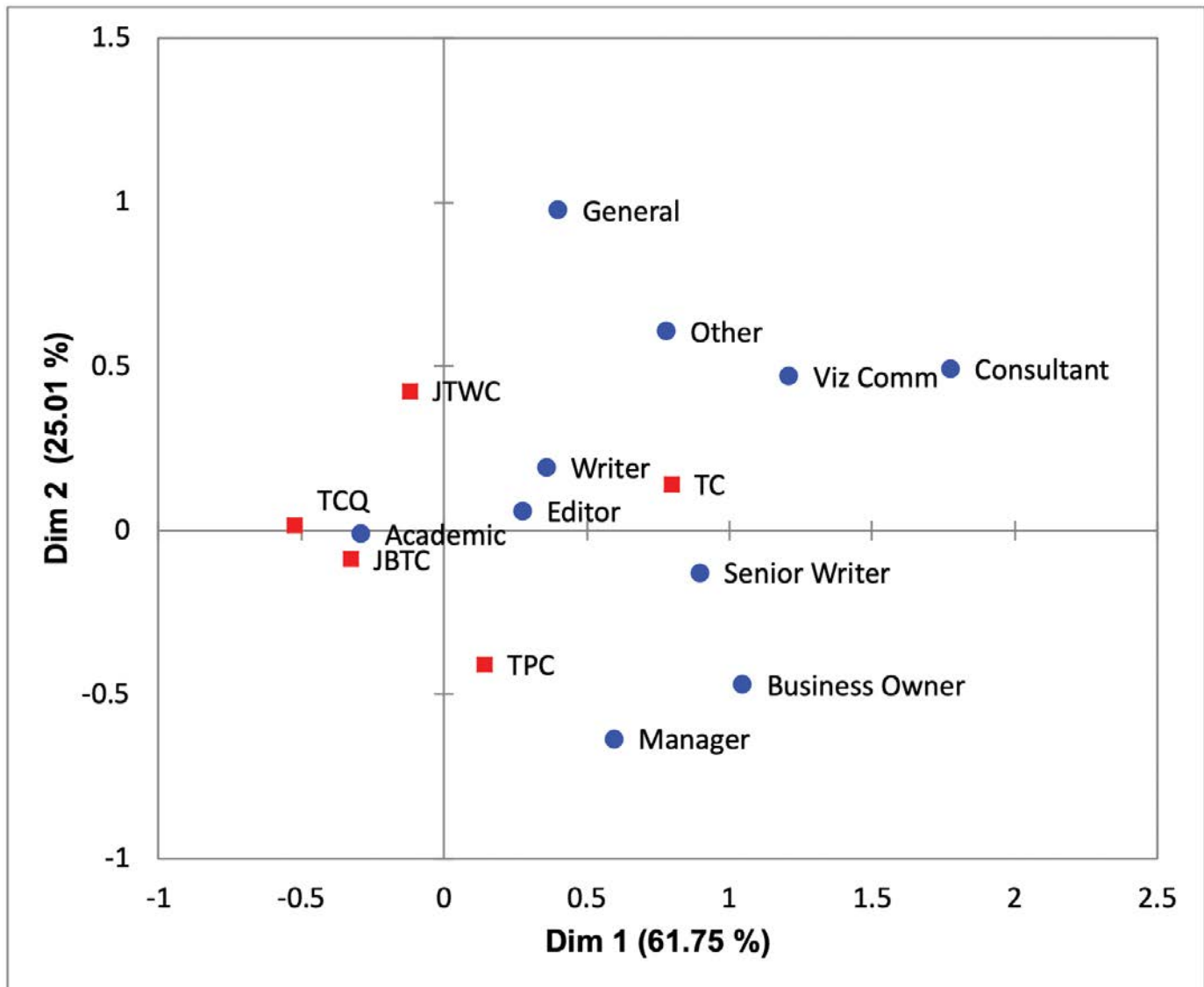
Figure II. Correspondence analysis between *journal* and *primary audience*. The eigenvalues for the first two dimensions are 61.75% and 25.01%, respectively, indicating that the visualization explains 86.76% of the variation (inertia).

Joseph Little and Kirk St.Amant were first author on the most articles ($n = 6$), followed by Ned Kock, Edward Malone, and Jason Swarts ($n = 5$ each). All of these authors held university affiliations.

Affiliation type
The sample included 92.1% first authors with academic affiliations (see Table V). The sample included 272 different academic affiliations (associated with the first author). Authors affiliated with Texas Tech University published the most articles in our sample ($n = 20$); followed by Iowa State University ($n = 17$); University

of Central Florida, University of Memphis, and North Carolina State University ($n = 15$ each); University of Minnesota and University of Washington ($n = 14$ each); Auburn University ($n = 12$); University of Twente ($n = 11$); and University of North Texas, Utah State University, and Virginia Tech ($n = 10$ each).

Only 7.9% of the first authors had an industry or government agency affiliation. These affiliations were represented in all five journals; however, 80% of these affiliations appeared in either TC or TPC (60.38% and 20.75%, respectively). Overall, five articles were written by independent contractors. Authors affiliated with

IBM (*n* = 3) and FLIR Systems (*n* = 2) contributed multiple articles to the sample, but the 43 other affiliations were only represented once.

Geographic affiliation and world region
The sample included 82.9% first authors who held a national affiliation (i.e., anywhere within the United States, see Table V). TPC and JBTC published the most first authors with international affiliations (32.5% and 20.5%, respectively). TCQ published the least amount of first authors with international affiliations (4.38%).

Finally, 86.8% of first authors were affiliated with institutions or organizations in North America (see Table V). The sample also included affiliations with Europe (8.18%), Asia (3.72%), and Australia (1.34%). TPC published the most first authors with international affiliations (39.1%), while TCQ published the least (1.46%).

RQ3: Collaboration Patterns
What are the collaboration patterns among authors? What patterns prevail in certain journals and on particular topics?

Journal and authorship
To answer the third research question, we examined the authorship and affiliation results beyond the descriptive statistics. A CA identified a significant

Table IV. Frequencies of single-, co-, and multi-authored articles

Authorship	Journal					Frequency
	JBTC	JTWC	TC	TCQ	TPC	
Single	64	97	73	93	72	399
Co	37	29	39	26	47	178
Multi	11	7	15	18	44	95
Grand Total	**112**	**133**	**127**	**137**	**163**	**672**

Table V. Frequencies of gender, affiliation type, geographic affiliation, and world region in articles

	Journal					
Gender	JBTC	JTWC	TC	TCQ	TPC	Frequency
Female	69	56	59	73	84	341
Male	43	77	68	64	79	331
Affiliation Type						
University	110	128	95	134	152	619
Industry	2	5	32	3	11	53
Geographic Affiliation						
National	89	122	105	131	110	557
International	23	11	22	6	53	115
World Region						
North America	97	122	111	135	118	583
Europe	10	9	12	2	22	55
Asia	4	0	3	0	18	25
Australia	1	2	1	0	5	9

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relationship between *journal* and *authorship* (χ^2 = 42.281 p < 0.00). Three associations were identified from the statistical output (see Figure III).

The strongest correspondence was between TPC and multi-authorship. The journal published 46.3% of the multi-authored articles in the sample (see Table IV). Next, JBTC and TC corresponded with co-authorship. Both journals published 42.7% of the co-authored research in the sample. Further, 33% of the JBTC sample and 30.7% of the TC sample were co-authored. JTWC and TCQ did not correspond with an authorship pattern; however, both produced substantially more single-authored research than the other journals.

Preliminary collaboration patterns

Based on these CA results, we further examined the 193 articles that were written by two or more authors in TPC, JBTC, and TC. As summarized in Table IV, these journals collectively published 70.7% of the sample that was written by two or more authors. These three journals demonstrated the strongest inclination for collaboration and, thus, might suggest more generalizable authorship patterns in technical communication. We present these results as preliminary because they represent a sub-sample of a larger sample and are not necessarily reflective of the population.

Overall, we found that 58% of these collaborations were led by female researchers. Further, 8.81% of these first authors had an industry/government affiliation, and 34% had an international affiliation. All of these

Figure III. Correspondence analysis between *journal* and *authorship*. The eigenvalues for the first two dimensions are 79.98% and 20.02%, respectively, indicating that the visualization explains 100% of the variation (inertia).

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results exceed the collective averages reported for the entire sample.

Additional results found that 23.83% of the articles were led by a student (*n* = 46), suggesting a mentorship pattern. Finally, 10.36% (*n* = 21) included collaboration between at least one academic and one industry professional. In these collaborations, 75% of the lead authors had an academic affiliation.

Topic and authorship

A CA identified a significant relationship between *primary topic* and *authorship* (χ^2 = 69.495 p < 0.00). Five associations were identified from the statistical output (see Figure IV).

The strongest correspondence was between rhetoric and single authorship. Results found that 78.3% (*n* = 72) of the rhetoric sample were written by a single author. Further, 18.1% (*n* = 399) of the sample's single-authored articles were on rhetoric. Next, articles on both collaboration and communication strategies corresponded with multi-authorship, and 27.8% (*n* = 10) and 22% (*n* = 11) of the articles on these topics, respectively, were written by three or more authors. Finally, pedagogy and editing both corresponded with co-authorship, and 18% (*n* = 32) and 38.5% (*n* = 5), respectively, of the articles on these topics were written by two authors.
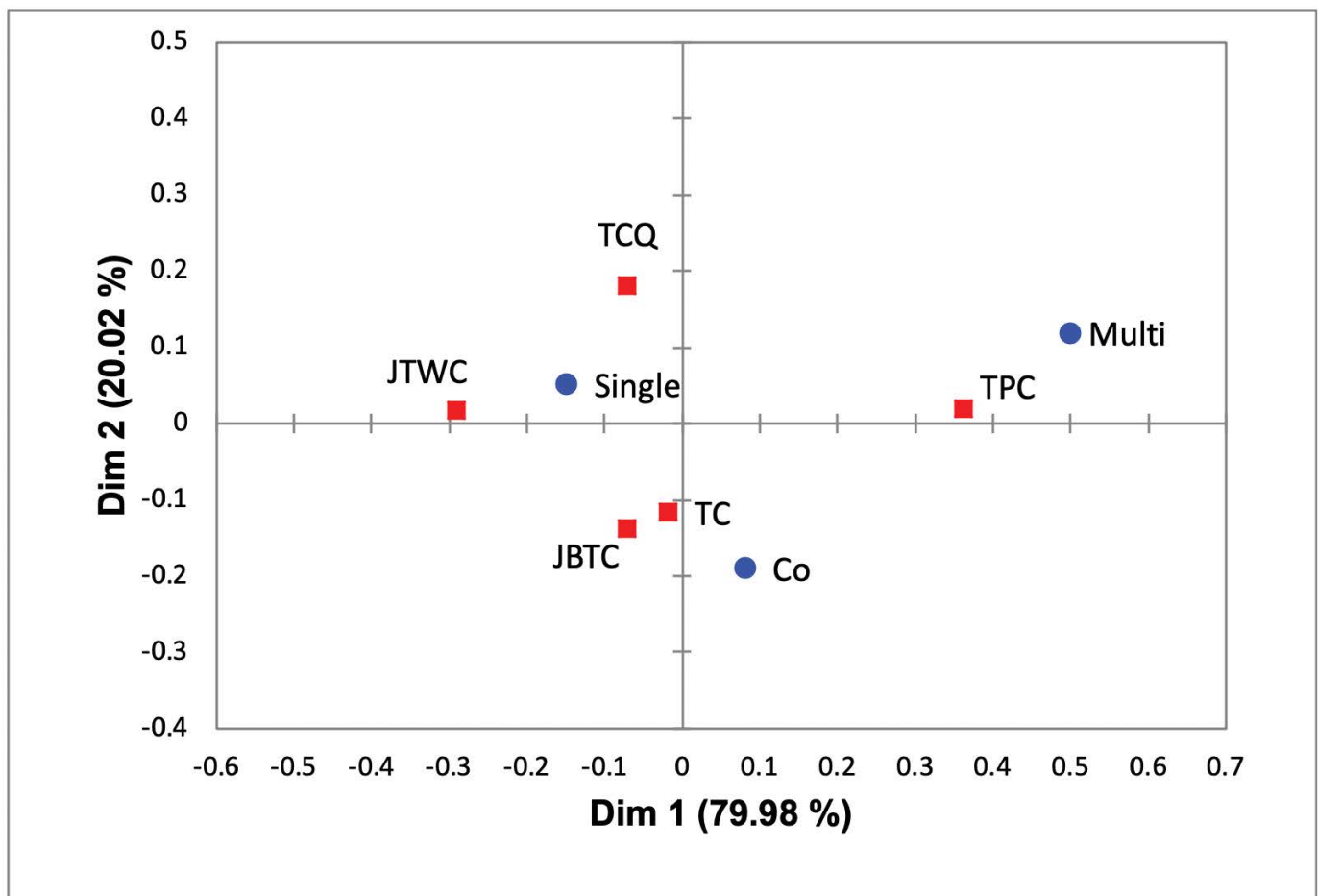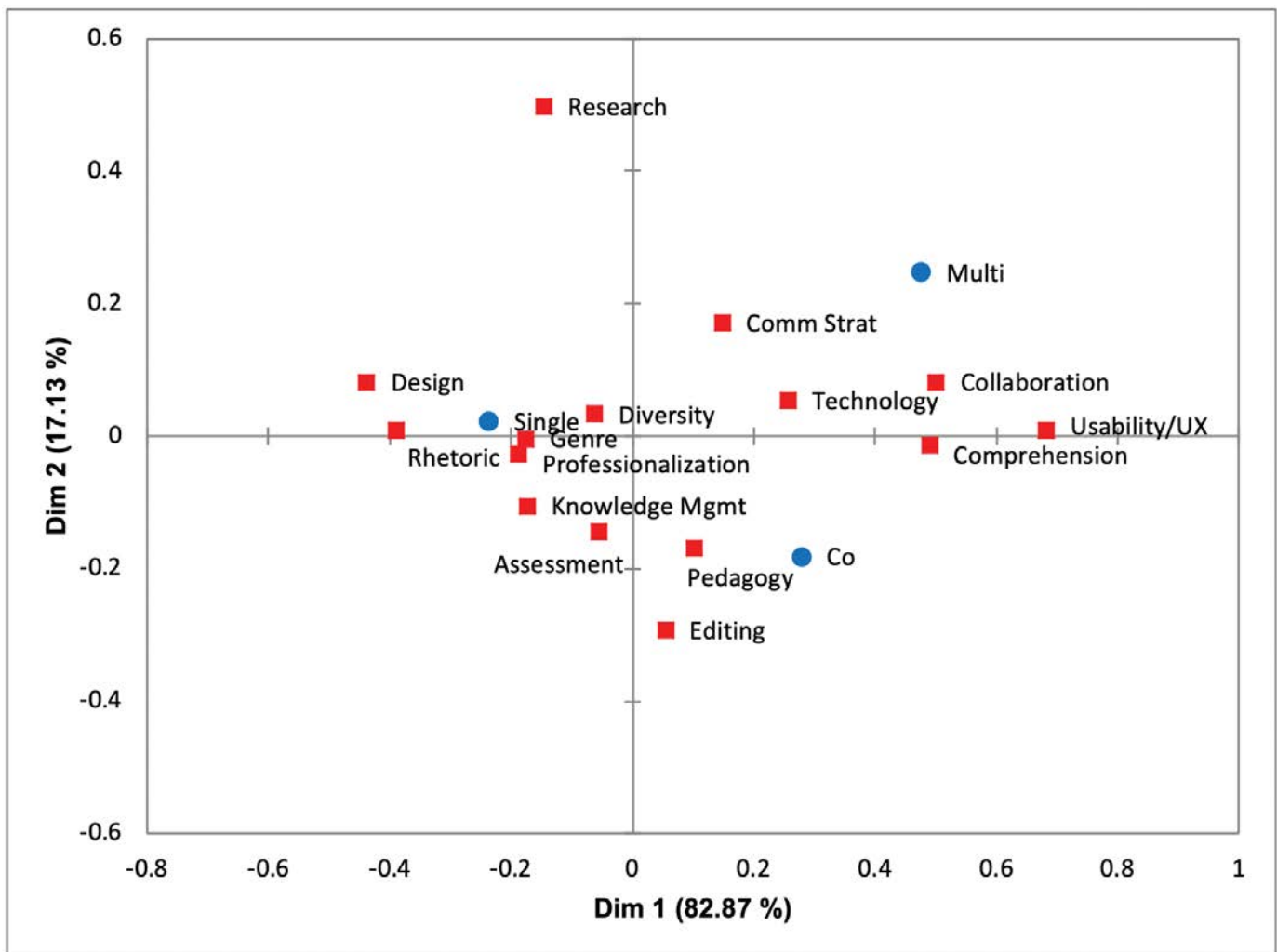

Figure IV. Correspondence analysis between *primary topic* and *authorship.* The eigenvalues for the first two dimensions are 82.87% and 17.13%, respectively, indicating that the visualization explains 100% of the variation (inertia).

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Gender and authorship

As reported earlier, 50.7% of the first authors in the sample were coded as female. However, males published 53.6% (n = 214) of the singled-authored articles compared to females (n = 185). In contrast, females led 57.1% (n = 156) of the articles written by two or more authors compared to men (n = 117). These authorship patterns were significant (χ^2 = 7.5 p < 0.01).

DISCUSSION

The motivation for this study was to analyze the content and authorship patterns that inform technical communication scholarship and, thus, provide baseline findings for future research and help ground the current state of technical communication. In this discussion, we explore what these results may mean for the "visibility, identity, status, and sustainability" of the field of technical communication that Rude discussed (Rude, 2009, p. 207).

The content areas of technical communication have been remarkably consistent for decades.

Smith's analysis of technical communication scholarship from 1988–1997 revealed a shift in the field's legitimization, and, collectively, a move away from composition theory and a focus on rhetoric (Smith, 2000a, 2000b). She found JBTC and TCQ to be the leading publications for authors with academic affiliations as well as the forums for the field's more theoretical discussions. In particular, TCQ experienced tremendous growth after transitioning from the more focused *Technical Writing Teacher*. In contrast, TC and TPC—journals both affiliated with professional organizations—typically published scholarship from the point of view of the practitioner. TC also aligned with design-related content, TPC with communicating with engineers and subject matter experts, and JTWC with pedagogy.

Our present study includes over two additional decades of data; however, our results show no considerable change to Smith's (2000a, 2000b) previous research. Rhetoric solidified itself as the most common primary topic and appeared in the sample more frequently than expected. TCQ corresponded with rhetoric-focused articles, while TPC corresponded with collaboration and communication strategies (mostly related to engineers and other SMEs). TC continued its

correspondence with design, while JTWC corresponded with content focused on pedagogy.

In sum, content in professional and technical communication journals has remained consistent for thirty years. Though the field has matured, the journals have held fast to their defining characteristics. On one hand, this consistency suggests stability, and the content shifts observed in the mid-1990s were needed to advance technical communication. More important, these shifts remain (or, appear to remain) mutually shared by its scholars. On the other hand, this consistency is somewhat surprising for a young academic discipline that was only finding its footing a short time ago.

Content on usability/UX, comprehension, knowledge and information management, research design, design, and editing and style appeared less than expected.

Results from the contingency table analysis found that content primarily focused on usability/ UX, comprehension, knowledge and information management, research design, design, and editing and style appeared in the sample less frequently than expected.

Collectively, these topics are all field-defining and represent the foundations of technical communication. Arguably, the field has necessarily evolved from these original foci and established an alternative foundation that includes higher-level aspects of the universes in which we do our work. Hart and Conklin (2006) identified increasing variety in the duties of current technical communicators. The evolution of the profession now places technical communicators in all phases of product development rather than solely in the added-benefit final phase just prior to product deployment. Current technical communicators are becoming "strategic negotiators" who create deliverables beyond user manuals and online help and engage in non-traditional tasks and processes, including teamwork and business process-development (pp. 413–414).

However, the lack of coverage of these topics in our peer-reviewed literature could be worrisome given that they encompass skillsets that technical communication hiring managers require (Brumberger & Lauer, 2015; Kimball, 2015; Lanier, 2004, 2009, 2018; Lauer & Brumberger, 2016; Rainey et al., 2005). The description of technical writers by the Bureau of

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Labor Statistics, a description developed by the STC and technical communication practitioners, further highlights these skills as necessary for meeting the projected demand of the profession (Brennan, 2016; Carliner, 2012; "Occupational Outlook Handbook: Technical Writers," 2018).

We ask scholars to consider if a de-emphasis on these types of topics is deliberate or necessary for growth. As an example, editing and style was the least frequent primary topic. The topic accounted for 1.93% of the sample compared to the 13.69% of articles on rhetoric. Editing and style is a topic that the field has not yet interrogated through rigorous scholarship, and, in fact, much of the related information that we teach students has been described as "technical communication lore" (Graham, 2017, p. 13). Further, a recent census of the field found that editing was the second most prominent work responsibility of the 676 participants (after content creation), with 12% identifying it as a primary responsibility, 31% as a secondary responsibility, and 15% as a tertiary responsibility (Carliner & Chen, 2018). In his recent editorial, Graham (2017) wrote that effective technical writing was nearly universally understood to be clear, concise, situated within a genre, and directed toward a specific audience. He argued that only half of these virtues (audience and genre accommodation) were well established through rigorous scholarship, while research related to clarity and concision were often based on anecdotal or contradictory information. Such foundational topics may be less appealing to developing technical communication scholars, but with the continuing growth of content management systems and user-generated content along with ongoing changes in what audiences consider appropriate in given communicative situations, the need for research focused on editing and style is large. In fact, technical editing remains one of the most under-researched subfield in technical communication (Boettger, 2014; Eaton, 2010).

If lack of interest explains the absence of some topics, relevancy to the field might explain the absence of others. Usability/UX, which partially evolved from technical communication research, is now, by many measures, its own field of study, with its own conferences, publication forums, and professional organizations (J. Redish, 2010; J. G. Redish & Barnum, 2011). Redish and Barnum (2011) observed that they do not see many technical communicators at UXPA (the annual conference for usability professionals), nor do they see UX professionals presenting at technical communication conferences. They note that while both are part of the same family tree, sharing a deeply intertwined history, the two fields are now more like "distant cousins" (p. 100). Results from the present study suggest that technical communication journals have largely ceded the study of this topic. The loss becomes particularly troublesome when a recent analysis of research methods found that the usability/UX articles published in technical communication journals were typically replicable, aggregable, and data-supported (Lam & Boettger, 2017).

Future research needs to investigate why scholarship on these foundational topics are appearing with less frequency. We concede that our analysis of academic journals provides an incomplete perspective of the field's overall content distribution and that trade publications like *Intercom* might cover these topics with more depth. However, these foundational topics merit scholarly attention since "knowledge derived from basic and applied research" could benefit both the practice and the theory of technical communication (Rainey & Kelly, 1992, p. 570). These disconnects are further evidence of the field's incommensurability problem (St. Amant & Melonçon, 2016).

Content primarily focused on rhetoric, pedagogy, genre, and diversity appeared in the journals more than expected.

Results further indicated that scholarship on rhetoric, pedagogy, genre, and diversity appeared in the sample more than expected. From a content perspective, Boettger and Friess (2016) argued that rhetoric was needed to inform technical communication, but rhetoric, when explored in abstract, was not technical communication (p. 321). Pedagogical research has been found to be of limited value to practitioners because they often have limited applicability outside the classroom (St.Amant & Melonçon, 2016). Pedagogy is arguably a topic that fits best in the academy; however, the field's current pedagogical research often involves classroom experience reports, which typically have limited value beyond that particular experience (Lam & Boettger, 2017). Eaton refers to this research as "cup of coffee articles;" the results are useful, but only as useful as having a cup of coffee with a colleague

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and discussing an experience (Eaton, 2010, p. 9). Other popular topics, such as genre, have already been well established through rigorous scholarship (Graham, 2017). The field then needs to consider if the amount of research being published on these topics is warranted (or even necessary).

In addition, the field needs to consider if the scope of the coverage these popular topics receive is sufficient. For example, genre research may appear more than expected, but scholars might consider the breadth of this scholarship. As noted previously, the role of the technical communicator is evolving, including the variety of products produced (Hart & Conklin, 2006). Recent census results suggest that technical communicators primarily produce user guides and help and user assistance topics (66% and 52%, respectively); however, these professionals are also creating user interfaces, marketing information, white papers, social media content, and chatbots (Carliner & Chen, 2018). Additionally, attention to technical communication standards, structured writing, and agile work practices are informing how technical communications develop these products.

And despite its visibility in the journals, the diversity in scholarship has been described as under-representative and, as an example, includes little perspective of women of color and their experiences in professional and technical communication (Jones et al., 2016). This present study builds from previous studies where content related to gender and intercultural communication were coded separately (Boettger et al., 2015; Boettger & Friess, 2016; Boettger et al., 2014; Boettger & Lam, 2013). We collapsed these categories and expanded the code book definition in response to the growing amount of scholarship focused on diversity and inclusion. The further production of scholarship coded as diversity will be more evident in a ten-year follow-up study.

From a methodological perspective, the approaches used to address these popular topics contrast with the approaches used to address less popular topics. A study of recent technical communication scholarship found that 68.8% of rhetoric, 75% of pedagogy, and 53.8% of genre research was non-empirical (Lam & Boettger, 2017). In particular, the rhetoric and pedagogy research revealed a heavy concentration of theory and commentary-based research when compared to the other topic areas assessed. Another recent study identified similar trends, including that TPC published almost 40% of the empirical research among the five leading technical communication journals (Melonçon & St.Amant, 2018). The findings suggest that technical communication research leans toward topics that have routinely not required rigorous empirical analyses, rigor that would likely be expected if the same research were to be published in other fields.

Professional and technical communication research is typically produced by a homogenous population. Results of the present study also revealed salient findings related to authorship. In her earlier study, Smith reported that male authors outnumbered female authors by a 2:1 measure (Smith, 2000b). Our results suggested that authorship has achieved more parity over 22 years. Female-first authors appeared in our sample slightly more often than males (50.7% compared to 49.3%). JBTC, TCQ, and TPC all published more female-first authored pieces than male. This gender distribution is consistent with what has been previously reported in JBTC (Burnett, 2003) and potentially surprising to those who considered TPC more male-dominated due to the journal's engineering origins.

We also found female authors collaborated more than males, a pattern that aligned with Smith's (2000b) earlier findings. A chi square test measuring males' tendency to publish as single authors and females' tendency to collaborate was significant. Overall, authorship among the five academic journals varied. JBTC and TC corresponded with co-authorship, and TPC corresponded with multi-authorship. TCQ and JTWC did not correspond with any pattern, but they published more singled-authored pieces than collaborative. We also reported preliminary information that suggested a mentorship pattern; students were lead author on almost a quarter of the subsample we analyzed. Additional research needs to be conducted on collaboration patterns, but a trend toward student-mentor publications would be a positive growth sign for the field.

However, beyond the gender balance of first authors and potentially positive trends in collaboration, the typical technical communication scholar was rather homogeneous. Authors in our sample were overwhelmingly based in North America (almost exclusively in the United States) and held an academic affiliation. Further, of the 92.1% of the articles that

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had first authors affiliated with academic institutions, 59.9% were affiliated with 12 academic institutions. Of these 12 institutions, 11 were large (over 20,000 students) public institutions based in the United States. This suggests that the majority of the field's research is conducted at only a handful of similar academic institutions concentrated in the US.

This suggests that voices that should be crucial in the shaping of the technical communication field are largely missing from the published research. Despite being a field that grounds itself in real-world communicative practices, voices from industry professionals are largely absent. With the omission of industry input, academic-driven research occupies much of the research journals with content areas that may be beneficial for tenure and promotion but of less value to a manager wanting to learn more about best practices in, for example, API documentation.

International voices were also largely absent from the data set. A lack of authorship diversity also assumes a lack of content that examines the different roles of technical communicators in other countries. In a recent tcworld post, an international business owner wrote that Korean and Japanese technical writers primarily produced documents for consumer products while U.S. technical writers covered a larger product range (Kim, 2017). These different functions require different skillsets, and the business owner stated that the U.S. content she's consulted over her career has not emphasized the character traits essential to developing consumer manuals. Over 75% of our journal articles were written by first authors with U.S.-based affiliations, and the remaining authors were dispersed among three world regions: Europe, Asia, and Australia. This pattern leads us to wonder why authors with more geographically diverse affiliations are not publishing in our leading journals, and, as important, what content they are reading (and perhaps producing elsewhere) about technical communication.

Our results offer several points of entry regarding the future scholarship in professional and technical communication. We invite readers to consider if these content and authorship patterns are the products of deliberate choices, and, if so, if this is the field's inevitable trajectory for the next 30 years. In turn, if some of these patterns were influenced by alternative factors, are there ways the field could or should adjust?

CONCLUSIONS

In conclusion, our study currently provides the most comprehensive, longitudinal analysis of content and authorship patterns within the leading technical communication journals. While other journals exist on the periphery of the field, they do not yet have the sustained publication record to be included in this particular study; however, future researchers may wish to complement this current study with data from those forums.

In terms of authorship, our study suggests that a narrow band of researchers with relatively homogenous characteristics drives the research of the field. Underrepresented voices, namely non-U.S. scholars and industry professionals, are needed to help accurately shape the field from a research perspective.

While authorship in technical communication research potentially suffers from a homogeneity problem, the content areas in technical communication potentially suffer from a diversity problem. Carolyn Rude asked, "What makes technical communication distinct and recognizable?" (Rude, 2009, p. 175). Our research fails to locate a satisfactory answer to that question. The sheer broadness of the field (as evidenced in the 15 identified content areas) hampers our ability to identify what does, in fact, make technical communication distinct and recognizable. Turning to the content areas that appear most frequently doesn't help us answer Rude's question as those content areas either exist as their own academic discipline (e.g., rhetoric) or within any number of academic disciplines (e.g., pedagogy, diversity). The content areas that have traditionally been tied to technical communication (e.g., usability/UX, editing and style, design, and knowledge and information management) appear so infrequently in the published research it is difficult to suggest that those content areas help to make technical communication, from a research perspective, distinct and recognizable. Rather than laud this content area diversity (Rainey, 1999), this diversity gives us pause. Rude suggested that "an academic identity with research that others recognize requires some consensus on the value we bring to knowledge making" (Rude, 2009, p. 175). Our results suggest that such a consensus still eludes the field.

Thirty years later, our results reflect consistency and distinction, at best, or complacency and stagnation, at

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worst. The field has demonstrated that it can pivot and hold the line. However, this occurred at a time when its scholars seemed to mutually agree on the direction forward. Our results suggest several paths forward, but the field must first establish a new common ground for technical communication to move forward with relevance, sustainability, and cohesion.

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The Profession of Technical Communication through the Lens of the STC India Chapter: Understanding Current Perspectives and Future Directions

By Breeanne Matheson and Emily January Petersen

ABSTRACT

Purpose: India's community of technical communicators has grown steadily since the 1990s; however, scholarly research contains little about the experiences and needs of this community. We aim to enrich existing literature by sharing questionnaire results that begin to establish the state of the field in India. We discuss the way practitioners associated with the STC India chapter professionalize through education and training and innovate by experimenting with new genres and technologies.

Method: We administered an online questionnaire with 32 questions among participants at the STC India conference in Bangalore; 76 people responded. The questionnaire asked about participants' professional backgrounds, vision for the future of TPC, and educational experiences. Data from the questionnaire, both qualitative and quantitative, was anonymized, coded, and evaluated.

Results: The data suggest that practitioners in this study view their most significant role as writing and have high levels of content knowledge and experience with cross-cultural collaboration. They are educated in the technical and scientific fields but see themselves as lacking opportunities for university degrees in technical communication. Participants were aware of the constantly changing nature of the economy and workplaces and articulated how technical communication in India may be affected. The data illuminated the potential for improved cross-cultural partnerships in research and industry.

Conclusion: Practitioners in this study possess high levels of education and understand the importance of change in technical communication. They are working to adapt and stay relevant in a rapidly changing field. The data suggest that these practitioners are seeking additional technical communication-specific training. More research is needed to understand the state of technical communication in India more broadly.

Keywords: Globalization, India, Professional Practices, Technical Writing, Education

Practitioner's Takeaway:

- An understanding of current trends and practices in an increasingly global market is essential to the work of technical and professional communicators in the current transnational economy.
- Technical communication practitioners should become aware of the expertise and experiences of technical and professional communicators in India and find ways to learn from and collaborate with them.
- Although technical writing skills now include video development, user experience, etc., writing continues to be a central skill for practitioners in India. Focusing on that strength is a way to maintain relevance amid technological changes.
- University educational opportunities in technical communication are limited in India, meaning there is continued room for United States-based STC chapters, instructors, and skilled practitioners interested in mentoring to connect with practitioners there on training and education.

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INTRODUCTION

This article reports the results of a questionnaire administered among technical communicators at the Society for Technical Communication (STC) conference in in Bangalore, India, in December 2017. This project aims to enrich the literature about how practitioners of technical and professional communication (TPC) in India professionalize, innovate, and contribute to the field. The lack of literature available about technical writers in India is a problem because TPC communities exist worldwide, yet the field has failed to share practices and values between and among communities. The purpose of this study is to share what Indian practitioners within the STC India chapter community know about TPC with practitioners in other communities. Our research question, as a way of identifying and understanding one of these communities, is the following: "What is the state of technical communication in India?" As a pilot study, this project only begins to address the larger question and aims to point out areas of further research.

We designed this study after the example of Giammona's (2004) article and questionnaire about the state and future of TPC that aimed to assert relevance. Conducting research on the nature of a community and its place within a larger context is one way of ascertaining the relevance of TPC as a networked, human endeavor that connects writers across continents. Work like Giammona's needs to be completed in all countries with TPC communities. Giammona's work included 28 participants, including people in international locations like India, but primarily focused on U.S. professionals. Her results do not tell us anything specific about India, yet India's TPC community and practices have grown steadily since the 1990s. Giammona's questions focused on key themes in the field, and we used her questions from 2004, provided in the appendix of her article, as a basis for our research. We updated the questions with contemporary themes and ideas. Like Giammona's study, this project is small in scale and represents a similar call to conduct more work in India.

Our results reveal the necessity of continuing to take a pulse of the field in India and, more specifically, to understand the role practitioners in India play in the globalization of TPC as a profession. The field needs in-depth, international points of view because technical communicators are now working with each other around the globe. Technical communicators in India represent a significant population of practitioners and, although no exact count exists, the explosive growth in the field means that no exact count of practitioners can currently be made (Matheson, 2018, p. 4). Scholarly research contains little about the experiences and needs of this community, and studies of diverse workplace practices, including the growing community in India, are needed. Given these exigencies, we must pay attention to the particular experiences of TPC communities rather than lumping all practitioners into one category. We can cross-reference what we learn from each community and learn from each other, increasing the benefits of globalization.

The need for this questionnaire arose after we conducted a qualitative study of 49 women working as technical communicators in three different cities in India in July 2016 (Matheson & Petersen, 2019). The project involved a snowball sampling of women and sought to understand the training, workplace experiences, and concerns of women working as technical communicators in 2016. This data showed a need for additional research and reach beyond our original study population, which suggested that female practitioners in India saw themselves and their professional lives through a mix of complex identity factors that included but also stretched beyond gender. In order to understand the dynamics at play among technical communicators in a globalized field, it is necessary to apply a theoretical lens that accounts for the multiple intersectional factors that technical communicators face. In line with Crenshaw's (1989) work on intersectionality, which explains that one's experience in the world is greater than the sum of one's race or sex (p. 140), we observed that our analysis needed to take into account the complexity of intersections of identity, and we designed this project to allow female and male participants to share more about their complex experiences in a globalized profession.

To this end, we borrowed from Giammona's strategy for understanding the state of the field and developed a questionnaire to be shared among in-person and online participants of the annual STC conference, which is the largest gathering of technical communicators in India. This strategy allowed for a wider range of participation among technical communicators in India. Further, because the questionnaire was available in an online format,

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it allowed individuals to participate online after we returned to the United States.

LITERATURE REVIEW

In response to the growth of technology jobs, TPC as a profession in India grew quickly through the 1990s. However, the exact rate of growth is unknown. Still, the field lacked formal training or even methods of peer-to-peer information sharing, leading to the foundation of the Technical Writers of India (TWIN) mailing list, which connected technical communicators to one another. By 1998, discussion began about founding a chapter of the STC in India; this process was carried out by fifteen founding members. The first Administrative Council took charge with Gurudutt Kamath as the chapter president in 1999 (About us, n.d.).

The field has continued to grow in India, and Pune University was one of the first to introduce a certificate course in technical communication, which has since been discontinued. In addition, interest in TPC as a profession is evidenced by universities—such as Indian Calicut University, Stella Maris College, Symbiosis School for Liberal Arts, and the Indian Institutes of Technology—offering courses in technical writing at various times. However, none of these institutions currently offers formal degrees in TPC (St.Amant, 2007, p. 17; "Technical writing colleges in India," n.d.).

Limited scholarship about TPC in India has been conducted, in part because technical communication scholarship has a problematic history of focusing solely on Euro-western narratives (Hass, 2012; Petersen, 2017a). More recently, scholars have addressed the ways TPC practitioners in certain communities are often overlooked due to factors such as race, geography, gender, and socioeconomic status (Haas, 2008; Agboka, 2013; Dura et al., 2013; Petersen, 2014; Rose & Walton, 2015; Walton et al., 2015). Practitioners in India continue to be overlooked. However, what exists reveals that TPC in India is fast-growing and contains a robust number of highly trained professionals. This large community is also home to the only chapter of the STC outside the United States and Canada (Communities, 2018), making it an important site of study because of its structural support network.

Taking stock of the field is an important part of regular scholarship, especially since researchers and practitioners must work in tandem to best understand and teach the field to students to retain professional relevance in a global economy. As Spilka (2010) noted, "Technical communicators have important options to consider; given the pervasiveness of technology in our field, technical communicators need to take stock, now, of what recent changes in their work contexts mean for the work, and then make a decision, for example, to adapt to the changes and become a valuable asset to a work environment" (p. 3). Further, Rude suggested that "Any mapping of a field will construct its power relationships" (2009, p. 178). Research about the field is not an individual agenda but part of the greater purpose of building up a community. We must further begin to include communities that have traditionally (and geographically) been on the margins in order to understand TPC as a global, networked endeavor. Further, these global sites of study are particularly relevant because "transnational practices, ideas, or texts are not homeostatic or sacrosanct but rhetorical" (Dingo, 2012, p. 19), and individuals working in these globalized contexts may have different experiences and insights rooted in the local cultures in which they work. Further, common practices in the United States may not transfer to other cultures seamlessly, which means further study is needed to understand the way that globalized TPC practice works in localized areas (Opel & Stevenson, 2015).

Giammona's (2004) article laid the groundwork for studying the state of TPC practice, and we used her work as a stepping stone to update our understanding with context-specific information. She argued for the importance of technical communicators "becoming more influential and savvy to the businesses we serve, supporting ourselves from within through vital professional societies, and making the world in general more aware of who we are and what we can do" (p. 362). Although Giammona's work is now somewhat dated, the need to promote TPC is an ongoing issue, one that Petersen (2017b) found among female practitioners in the United States and that we found in our study of female practitioners in India (Matheson & Petersen, 2019).

Giammona (2004) further contributed the importance of understanding the state of the field at a specific moment in time. Her article represents the need to take stock of where we are, and she asked and answered pertinent questions about how we define what a technical communicator is, what is changing within

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the field, and how practitioners can remain relevant and contribute to the future of changing organizations. Innovation, globalization, education, and technologies are all part of the equation when it comes to assessing, understanding, and reporting on the state of the field. With these themes in mind, Giammona suggested improving professional societies, becoming better at business and management, and keeping up with current trends. She ultimately noted that "our profession . . . seems to be at a crossroads" (p. 352). Similarly, research and practice in TPC is as a whole is at a crossroads, with globalized labor increasingly becoming the norm. However, the research has not kept up with the scope of the increasingly globalized field. This global crossroads demands that scholars pay more attention to social justice, global marketplaces, transnational identities, and workplace trends in order to resist the Euro-western-centric narratives that have long dominated the field. We must give ample recognition to the important work that is occurring globally in the field (Hass, 2012; Petersen, 2017a; Petersen & Walton, 2018). Inclusivity in our descriptions of technical communicators and our understandings of current practice are also urgent. Attempting to understand and meet the needs of practitioners in India, who participate in every aspect of our changing field, is one way of doing so.

As we undertook this project, we understood that scholars already concerned with global issues warn that cross-cultural research requires careful consideration to avoid replicating troublesome colonial tendencies. Agboka (2012) warned against the generalization of cultures and populations, observing that "researchers have tended to use 'big culture' labels to name these specific groups in these geographical areas, as if they were monolithic" and that this practice can lead to tokenization, essentialism, racism, culturalism, and, eventually, imperialism (p. 172). Local culture is made of dialogue between insiders and outsiders of any given community, making it hard to separate local culture from global culture (Sun, 2012, p. 25). Further, as cultures clash or intersect, identities are "formed, (re)formed, shaped, (re)shaped, constructed, and (re)constructed. Only by appreciating these ongoing discursive elements during intercultural communication can we appreciate the complexities of culture. Thus, in essence, all culture is interpersonal" (Agboka, 2012, p. 174), and, as such, we should "emphasize the centrality of individuals who become active agents always constructing their cultural

identities—not merely passive agents acting out their national or group cultures" (p. 174). As a strategy toward avoiding colonization, scholars have emphasized the value of working closely within communities by collaborating reciprocally, enacting their values, and making a positive impact while still producing insightful research. The community partner, in turn, can help to more widely disseminate the results and recommendations of studies so that all participants can engage in dialogue that promotes understanding (Propen & Schuster, 2008).

We have enacted these values by working closely with our partners in India, networking with technical communicators there, maintaining contact after our visits, and listening to their concerns. Our questionnaire was developed by asking what they needed and allowing STC leadership to confirm that our questions were valid and useful to community members. This article, based on community members' responses, suggests there is still much work to be done in terms of creating knowledge with technical communicators in India.

METHODS

We are researchers connected to U.S. universities and, as such, do not live or work in India. This positions us as outside observers to the TPC community in India. To begin this project, we collaborated with our existing contacts in India, such as STC India and the people we met while conducting research in 2016. We obtained permission to administer a questionnaire at the conference in Bangalore, India, on December 8 and 9, 2017; we were already set to share the findings of our 2016 project with conference attendees at this time. The organizers of the conference provided a table to us to use while gathering data, and we received a grant of $7,000 from Utah State University for travel and equipment to conduct the research.

The research was approved through Weber State University's IRB (#17-AH-002). The online questionnaire was created in Qualtrics, and the questions were reviewed by STC India leadership members. The full questionnaire is listed in Appendix 1. Participants were recruited during our conference presentation, in the conference hallway, and on social media channels using the conference's social media hashtags. Participants were incentivized to participate with a drawing for twenty $20 gift cards from Amazon. We used dollars instead of rupees because of the need

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to purchase the cards before we traveled from the United States to India, and we checked with one of our contacts in India to ensure that dollars would work for recipients. He confirmed that it was fine. All questions were presented to every person who agreed to participate. The research was conducted during the two-day conference and the online questionnaire was left open for an additional month to allow individuals to respond. The link to the questionnaire was sent out again via Twitter using the conference hashtags and in Facebook groups to allow individuals who were following along remotely to participate at a distance. Informed consent was obtained through the Qualtrics software. In total, 76 participants agreed to and completed the questionnaire.

The questionnaire had 32 questions divided into sections on participants' backgrounds in TPC, the state of the field according to their experiences, the future of TPC, management issues, and education. Questions included mostly multiple-choice answers (with features to choose more than one option or to rank options) and some open-ended questions.

Once collected, data from the questionnaire, both qualitative and quantitative, was anonymized, coded, and evaluated. Data from each question was placed in a frequency distribution table as part of a univariate analysis. Distribution data was compared for differences among variables. We recognize that the small sample of 76 respondents constitutes a pilot study and that the results are not necessarily representative of all TPC practitioners in India but are more likely to speak to the experiences of practitioners associated with the STC India chapter. We see a need for and encourage further study in India based on the patterns that are illuminated in this data.

We chose a questionnaire as our research method for two reasons. First, we wanted to emulate what Giammona (2004) did in her study as closely as possible in order to create a similar picture of the field in a specific moment. Second, we wanted to reach a large number of respondents in a short amount of time to capture a snapshot of a section of the field in India in 2017. We knew that a good place and time to do so would be at the annual STC India conference, which is the biggest TPC gathering in India. During those two days, attendees would have the time and inclination to complete a questionnaire rather than sitting down to a detailed interview with us. In addition, the conference

emailed and tweeted out a link to the survey in order to allow individuals following the conference at home to participate, enabling a greater reach.

FINDINGS

This section overviews findings about education, job entry, skills, changes, trends, and globalization. A total of 76 people responded to the questionnaire. Of them, 49 identified their primary role at work as "writer" (of print and electronic texts), which was by far the most common response. Sixteen identified as "manager," three as "editor," and two as "educator." Each of the other roles listed received only one response.

Table 1. Primary role at work

Writer	49
Manager	16
Editor	3
Educator	2
Analyst	1
Designer	1
Technical Content Strategist	1
Curriculum Design	1
Team Lead	1
Unknown	1
Total	**76**

The majority of respondents had a significant amount of work experience, with 33 reporting between six and ten years of experience in the field. Twenty-five more reported between 11 and 20 years of experience. Only three participants had less than a year of experience.

Table 2. Years of experience

6 to 10 years	33
11 to 20 years	25
1 to 5 years	13
Less than a year	3
More than 20 years	2

Participants were asked to identify the professional organizations they belonged to with the option to select more than one. Thirty-four participants had no affiliation and an equal number were associated with STC India. Two participants belonged to the User

Experience Professionals Association (UXPA), and no other organization was selected by more than one participant.

Table 3. Professional organizations (some participants belong to more than one organization)

None	34
Society for Technical Communication India (STC)	34
User Experience Professionals Association (UXPA)	2
E2Open	1
Institute of Electrical and Electronics Engineers (IEEE)	1
National Council of Teachers of English (NCTE)	1
Technical Writers of India (TWIN)	1
Project Management Institute (PMI)	1
International Institute of Business Analysis (IIBA)	1

Educational Requirements and Opportunities

In order to understand educational attainment among practitioners in India, participants were asked a variety of questions about their educational achievements and aspirations. Participants were asked to report their educational background from a list of bachelor's and graduate degrees categorized by broad areas of study, such as engineering, science, literature, business, and art. Participants were allowed to select more than one option where applicable. The most common degree among participants was a bachelor's degree in engineering (27 participants), followed by degrees in science (12 participants), with literature degrees trailing far behind (3 participants). All other bachelor's degree categories had only one respondent.

Participants had a high rate of graduate study completion, with 31 participants reporting having a graduate degree. Again, degrees in engineering and science were most commonly represented, with eight participants having a degree in each category. Seven participants had earned a master's of business administration and four participants had graduate degrees in literature. Notably, no participants reported having a degree in TPC, likely because no such degree programs were available in India at the time of the study. Although degrees in similar fields, such as business communication or mass communication, were available, participants in this questionnaire did not mention having degrees in these areas or seeking out

such degrees. Because this is a pilot study, more research is necessary to understand the role of degrees adjacent to TPC in India.

Table 4. Bachelor's degrees

Bachelor's degree in Engineering	27
Bachelor's degree in Science	12
Bachelor's degree in Literature	3
Bachelor's Degree in Business	1
Bachelor's Degree in Arts	1
Bachelor's Degree in Communications	1
High School Diploma	1

Table 5. Graduate degrees

Master's degree in Engineering	8
Master's degree in Science	8
MBA	7
Master's degree in Literature	4
Phd in Science	1
MCA	1
Diploma in Pharmacy	1
Diploma in Engineering	1
Master's Degree in Media	1

In addition to traditional university credentials, nine participants reported having completed a certification course for TPC outside of a university. These certificates were probably earned through private institutions, which are common and often stand in for the lack of university education options available (Matheson, 2018).

Despite having a high rate of education, when asked what kind of education or training new TPC professionals should have, participants chose "experience working in a technical field" nearly twice as often as any other option. Respondents selected "certificate or degree in technical communication" second most often (28 respondents), illustrating the large role that private institutes that offer TPC certificates currently fill. Selected third most often was

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"mentoring from other professionals" (21 responses), and fourth was "a degree in any field" (17 responses). The five individuals who selected "other" wrote in answers such as attitudes, soft skills, being open to learning, good language skills, and aptitude for technical matters.

Table 6. Training for new professionals

Experience working in a technical field	60
Certificate or degree in technical communication	28
Mentoring from other professionals	21
A degree in any field	17
Software tools and training	16
Training from professional conferences/meetings	14
Design training	11
Training from an online source	10
Other (please specify)	7

Participants were asked what educational training has been most helpful or valuable in their careers. Seven participants mentioned that above all else they valued the training they got on the job. For example, one participant explained, "Education definitely plays a vital role. But I would consider on-the-job training, which was really helpful for me." Another explained that their most valuable training was available at work, provided in-house by other TPC professionals.

Six participants mentioned that having a technical degree was their most helpful educational credential. One explained, "Pursuing engineering is my biggest advantage, at least I would live to believe so. It's helped me in understanding the products I write about and adapting to different technologies easily." An additional participant pointed out that even without a technical degree, they felt that experience in programming was their most valuable educational experience. Several participants pointed to training on various technologies as the most helpful education they obtained. The technologies they listed being trained on included various computer technologies, products they were using in the workplace, instructional systems, Robohelp, FrameMaker, API documentation, and DITA (Darwin Information Typing Architecture).

Five participants mentioned conferences as their most valuable training opportunity. They named

city-specific learning sessions and STC conferences as important opportunities. Four participants cited their participation in a TPC certificate or training program as their most valuable educational experience. One participant named a particular certificate from a private institution that they found valuable.

Other training opportunities cited by participants included non-technology-specific opportunities, including courses on language or writing, information architecture, project management, leadership skills, editing, film-making, and communication. Others valued their self-learning most, and one suggested that this was most easily accomplished by using books. Two respondents valued all of their training equally, and one indicated that this question did not apply to them.

Participants were asked, "What kind of training/education do you wish were available to you?" Five participants wished for more basic writing training, especially for those without a background in writing. A couple of respondents mentioned wanting more training in basic skills, such as audience awareness or communication.

Three other participants expressed that they hoped to see a more standardized training option for practitioners that would be valued across countries. One participant imagined that STC conference trainings might be able to fill this role. Another wished for more information about how different certificates would be recognized in other countries.

Two participants expressed that they wanted more online training in TPC to be available. One described the importance of having access to training information "on demand." Another suggested that free or no-cost options would be most beneficial.

Seven participants specifically mentioned the hope for coding- or programming-specific training. Six more people mentioned that they wanted additional technology or product trainings in order to stay abreast of "emerging technologies that actually add value." One mentioned that these trainings would be especially helpful if they included training on a new project when joining a team working on that product. Four participants said that they wanted more training on information architecture, which they believed would help them to improve "customer cognition and information retention." Two others hoped for additional training in project management.

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A number of participants wanted training for specific skills relevant to their work, such as whiteboarding, presentation skills, graphic design, DITA, user experience, information gathering, DevOps, management, information mapping, business analysis, and publishing. One participant wished to have access to internship opportunities, and one did not have a need for specific training.

Participants were asked to identify from a list the hardest skills to teach or learn in technical communication. They were allowed to select only one choice. Practitioners most often selected writing (12 responses), followed by programming/coding (9 responses), usability knowledge (8 responses), user experience (5 responses), information architecture (4 responses), researching (4 responses), and technical skills/knowledge (4 responses). At the bottom of the list were editing, interviewing, political savvy, project management, video creation, and Web design, with one response each. The participant who selected "other" clarified their response saying, "The hardest part is trying to relearn what was not learnt in school."

Table 7. Most difficult skills to teach or learn

Writing	12
Programming/coding	9
Usability knowledge	8
User experience	5
Information architecture	4
Researching	4
Technical skills/knowledge	4
Data visualizations	3
Leadership	3
Organizing information	3
Publishing tools	2
Editing	1
Interviewing	1
Other (please specify)	1
Political savvy	1
Project management	1
Video creation	1
Web design	1

Joining the Field of TPC

In order to understand the forces that bring practitioners to the field, practitioners were asked about how they came to be technical communicators. Because practitioners in India are often trained in fields outside of TPC, participants were asked how they transitioned to doing TPC work from their area of training. Some participants reported entering the field through "campus placement," by starting as interns or trainees or by self-training. Thirteen participants observed that their natural interest or skill for writing made it easy to transition into TPC without any formal writing credentials. One participant explained that a love of language helped them make the transition, saying, "I always knew I could write. I was fortunate to be able to showcase my writing skills and bloom into the role." Other participants explained natural progressions from IT, publishing, software development, marketing, or journalism, because they found a career in TPC was more exciting or interesting.

Seven participants came to writing from coding or engineering as a matter of interest or preference. One participant explained the natural transition from a technical position to writing because they "love writing and hate coding," and another stated that they chose to leave a software development job because they "did not like coding." Another described the job as a perfect blend of two skills they enjoyed, saying, "What's not to like in this job, which involves writing and engineering?" Two respondents reported coming to TPC from engineering because of its more family-friendly reputation. One described coming back from a long break after having a baby and reentering the field as a writer. Another reported making the jump to TPC after "working as a software developer for seven years" in order "to have more time for . . . family." One participant described being unable to find a technician job "because [she] was a girl," so she joined the field as a technical author in her industry instead.

Ten participants described coming to the field entirely by chance, stumbling upon it by recommendation through a friend, exposure to the position at work, or by slowly discovering that the work they were doing in engineering jobs was in fact TPC. They then formally made the switch.

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Important Skills in TPC Work

Participants were asked to select from a list five skills that they thought to be most important to TPC in 2017. As one might expect, writing was by far the most common choice, with 53 practitioners including it. This finding suggests that, despite technical backgrounds, a strong command of language remains vital to these practitioners. Research skills were selected second most commonly with 43 inclusions, and technical skills/knowledge was close behind, selected 42 times. User experience and information architecture were selected at similar rates as more traditional writing skills, such as editing and organizing information, suggesting that skills for working in technical platforms have become an integral part of their TPC work. Political savvy, social media skills, print design, and Web design ranked the bottom of the list, with only two participants selecting each as a top-five skill.

Table 8. Five skills most important in the field

Writing	54
Researching	43
Technical skills/knowledge	42
User experience	31
Editing	29
Information architecture	29
Organizing information	29
Interviewing	26
Usability knowledge	23
Publishing tools knowledge/expertise	21
Project management	16
Leadership	14
Data visualizations	9
Video creation	7
Programming/coding	3
Political savvy	2
Print document design	2
Social media savvy	2
Web design	2

In addition to the items from the list, four users selected "other" and wrote in skills that were not listed. Those included "the ability to articulate exceptionally well to a specific audience," "communication," "creativity," and "will to learn."

Changes in TPC

Similar to Giammona's (2004) findings about the United States, Indian practitioners in this study observed that technology is the most rapidly changing part of the field, with 23 respondents indicating that technology has changed more than anything else. Fifteen respondents reported seeing their value as professionals increase in the last five years. Nine suggested that they had observed writing styles change more than anything else.

The six individuals who selected "expanding job responsibilities" entered additional explanations about the roles their jobs had filled. One observed that "anything related to content gets done by technical communicators." Another explained, "Today, technical communicators double up and [have] subject matter expertise." Others named an expanding list of tasks now included in TPC, including visual design, media creation, conducting training, scripting and programming, video creation, user testing, writing for blogs, graphic design, and search engine optimization.

Table 9. Most changed in the past five years

Technology	32
Value to organizations	15
Writing style	9
Expanding job responsibilities (please explain)	6
Collaboration	4
Other	2
Education	1

The Future of TPC in India

Participants were asked, "What do you see as 'the next big innovation' in technical communication?" in an effort to understand changes that might impact TPC. This open-ended question yielded a wide range of responses.

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Sixteen participants observed that automated technologies, such as chatbots, artificial intelligence, and machine learning, seemed to be the future of TPC. Most offered this information without further comment as to how they thought their work might be impacted by these innovations. One participant anticipated that writing for technologies rather than humans might become relevant. Another anticipated the need to compete with technologies for jobs, stating, "AI will take our jobs. Give it ten years."

Ten people anticipated that content "other than regular writing" would become the norm in ways that will require users to "read less." Participants used words such as "interactive," "dynamic," "animated," "personalized," and "intelligent" to describe the ways they anticipated content changing. Two other participants suggested that content would become increasingly presented via video.

Six respondents mentioned innovations related to the way TPC practitioners might take responsibility for improved user experience, possibly to reflect the innovative content delivery methods mentioned above. One participant anticipated that technical communicators will be "part of [a] UX team (content strategy) so that they can plan content for a holistic customer experience and brand experience for common goals."

Individuals predicted innovations in areas such as analytics, content management systems, cloud-based content, "tool tips," conversational authoring, self-publishing, digitization, intuitive technologies, performance driven help, and other new technology integrations. Other individuals mentioned, as anticipated innovations, changes in style or priority, such as writers "avoiding unnecessary information," "collaboration with engineering," "customer centricity," and "customizing content in publication."

These predictions represent significant changes, as no one mentioned working with automated technologies in the most relevant skills for technical communicators in 2017 (yet they see such automations as the future of their work) and user experience was fourth on the list. However, if these predictions are true, the participant who observed that technical writers might need to become "'Super Writers' who can unlearn and relearn to meet the competitive world" might be onto something. We are not quite sure how to define a Super Writer, as the participant did not do so in detail,

but there is room for scholars and practitioners to embrace this term and find ways to meaningfully define it in theory and practice based on the changing needs and advances of TPC.

Indian practitioners are highly aware of changing workplaces and expectations in TPC. Their insights demonstrate their savvy and dedication to the constantly changing field. Although their responses lacked a central theme in predictions about exactly which technologies will prevail, overall participants suggest that being nimble and flexible in the face of change is the most important job skill for practitioners.

Participants were also asked, "What do you think technical communicators will be doing 5 to 10 years from now?" in an effort to understand what tasks and skills they see as relevant to the future of the field. The majority of responses to this question suggested that they anticipate the basic goals of TPC remaining the same. Fourteen respondents imagined that practitioners will still be involved in same tasks of developing content, writing, and communicating; however, they might do so using different tools and media. Respondents suggested that instead of written texts, they might write more often for video, audio, or chat bots, saying that TPC "may not be as lengthy and verbose as it is today." Instead, they imagined it might be "more interactive" and presented in different formats more appropriate for mobile. They also imagined that the content they create might be more specifically targeted to individual users. Three participants named video specifically as a main medium for future TPC, expecting technical communicators to eventually be "creating more videos than write ups."

Nine respondents wrote in tasks related to user experience and user interface, "advocating for the customer." Some expected that they might be "engaging closely with user experience professionals" while others suggested they might be "merged with" or "double[d] up" as user experience professionals. One even suggested that technical communicators might take on a leadership role in the future of user experience.

Four participants thought that the future of TPC would emphasize working with automated systems such as chat bots or artificial intelligence in ways that would protect, not replace, their jobs. They imagined that TPC professionals might be involved with "creating inputs" or "user stories" for these technologies to

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provide to customers. Lastly, three admitted that they did not know where the field was going.

When asked what technical communicators can do to ensure their role in workplaces continues to be important and valuable, eight practitioners recommended that they "learn, learn, learn." They recommended that practitioners stay abreast of trends, "upskill continuously," and "learn and unlearn" quickly to stay current. They explained that this learning might focus on the latest technology or on becoming a domain expert. Similarly, five others suggested that practitioners must adapt and evolve, learning "new ways of presenting content" and "learning new technical skills." Six other respondents thought innovation was key to moving forward, again mentioning new tools and technology. Additionally, they indicated that technical communicators should initiate new ideas and "think outside the box."

Eight respondents predicted that technical communicators will need to contribute more to other functions within their organizations. They offered a range of suggestions about how this greater contribution might look, including integrating themselves with product, sales, or support teams; getting more involved in "product and innovation" by being a valuable part of the product development process; aligning content with the functions of other teams; and volunteering to help other teams with the knowledge they acquire in their research processes. Additionally, five others explained that technical communicators must show the value of TPC to the company. They imagined that this effort might require them to increase their measurable profitability by improving the sales of a product, being able to measure ROI, and gaining respect from other teams.

Six participants thought that quality content is vital to staying relevant. They observed that technical communicators will one day need to present information in ways that are "visually interesting" and "crisp and creative." Becoming more customer focused was suggested by five additional participants. They recommended that technical communicators "be a customer advocate," become "flexible around customer needs," and "provide [a] personalized approach to audience." Two others indicated that they must work harder to improve user experience.

Globalization and TPC

The state of cross-cultural collaboration among participants seems to represent a give-and-take relationship. Participants were asked about the way that they collaborate with overseas colleagues and how they have taught colleagues in other countries. Participants saw themselves as able to share writing skills, with seven respondents reporting that they had helped overseas colleagues. They cited specifics, such as writing in plain and simple language, editing, organizing data, designing templates, implementing scripts, performing quality assurance, and conducting research.

Practitioners also described helping colleagues to understand how to work across cultures. Seven different participants described sharing India-specific knowledge and teaching colleagues to bridge cultural differences. They also described sharing awareness, such as respecting time zones and teaching processes that facilitated long-distance work. Others related teaching colleagues abroad "how to work with Indians" as well as fighting to prove that practitioners in India "can write and contribute." One practitioner recounted teaching colleagues abroad "about our work ethic, and dedication, and [that] broadened their perspective about [us]." Although some participants were clearly doing such work in an effort to bolster their professional status among coworkers, one participant also clarified that overseas colleagues "are very kind, professional."

Six participants mentioned coaching colleagues on specific tools or tricks of the trade. They cited tools such as Javadoc/Appledoc, Data Dictionary Dc, System Design Doc, and tools for media creation. Five participants reported mentoring overseas coworkers on technology, and three described teaching about technical aspects of the product. Four of the respondents explained that they have helped colleagues develop soft skills, such as hard work, teamwork, adaptability, having fun at work, and workplace communication. One described teaching others how to be "patient with a colleague who has little to no knowledge about technical aspects regarding the company's products."

Three respondents explained that they teach overseas colleagues collaboration skills for working together on creating and editing documentation. Three said that they helped colleagues in other countries keep

abreast of trends in the field, and one described showing the "role and value of technical communication [in] big picture goals." Four participants reported that they help overseas colleagues manage time, with two explaining that they mentor other colleagues in managing deadlines, timelines, and priorities, and two others saying that they have taught others to be more flexible.

Despite the range of responses given to this question, four participants observed that this question was not applicable to their situation, and one explained that questions about globalization were not relevant because their organization has a "technical writ[ing] team in India only."

Participants were also asked, "What have you learned from colleagues in other countries?" and were prompted to choose as many as applied from a list. Similar to the way Indian participants explained teaching others to collaborate, 38 participants observed they had learned collaboration skills from overseas colleagues. Participants also reported learning technologies/software (32 responses), writing techniques (26 responses), and trends in technical communication (21 responses). At the bottom of the list were participants who did not find this question relevant, those who selected "other" but did not specify, and project management.

Table 10. Skills learned from colleagues abroad

Collaboration	38
Technologies/software	32
Writing techniques	26
Trends in technical communication	21
Audience awareness	20
Language skills	16
Leadership	15
Not applicable to me	5
Other (please describe)	4
Project management	1

Part of a global work environment is using technology to communicate and collaborate with colleagues worldwide. Participants were asked, "How do you work with technical communicators from other countries?" and they were encouraged to select as many answers as applied. Email was the most

commonly used tool, with 66 respondents selecting it, and instant messaging was selected 55 times. Video messaging was also popular, selected by 37 participants. Fewer respondents communicated in person or via a manager, with 11 selections each. Five participants wrote in phone calls as their preferred method of communicating overseas.

Table 11. Tools used to collaborate globally

Email	66
Instant messaging	55
Video messaging	37
In person	11
Through a manager	11
Other	10
Other (specified): Call	5

DISCUSSION AND IMPLICATIONS

TPC in India includes individuals whose experience has spanned and shaped the field for over two decades. The experience and leadership of practitioners during the development of the profession and the establishment of STC India offers critical insight into the profession. Our findings offer some early implications about the state of TPC in India in 2017 and invite further research in order to more deeply understand the relevance of the Indian TPC community to other TPC communities worldwide.

The data reveal that these Indian practitioners view their most significant role as writing. While the profession has certainly changed due to technological advances and transnational corporate work, writing remains the key skill for TPC workers in India. Further, practitioners saw their primary identity at work as writers, even when they participated in other tasks, such as designing user interfaces, developing video, or contributing to product development. They observed, going forward, that their ability to do research and work with new technology is nearly as important as the ability to write.

These practitioners have high levels of content knowledge and are often highly educated in the

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technical and scientific fields for which they write. Savage (2003) observed that education can be a key mechanism for increasing professional value; however, educational options in India make obtaining TPC training a challenge, meaning that on-the-job experience and the abilities of writers to be flexible in their learning are key. Although many TPC training options exist in India, the country has a lack of formal university programs in TPC, which would make it easier for practitioners to obtain training during their university years (Matheson, 2018). Writers who are inclined to study English often complete literature degrees, which do not necessarily serve them well in the TPC workplace, as they do not receive training specific to rhetoric and writing (Matheson, 2018). Scientific and engineering degrees are also common and provide some important technical skills. However, practitioners with technical degrees commented that they would benefit from additional training in basic writing tasks. In addition, some participants obtained the bulk of their TPC training through certificates offered at private institutes, which have been praised as a useful way of obtaining hands-on experience with some supervision from experts in TPC. However, many of those participants observed that these certificates did not offer the same kind of long-term classroom instruction in basic TPC skills that university programs can offer. In addition, many individuals may obtain training on the job both locally in India and by working in the United States and Europe, which can serve as valuable forms of education as well (Matheson, 2018). More study is needed to understand the ways that non-traditional forms of education serve Indian practitioners.

Certainly, other educational programs in India, both in universities and in private institutions, may be teaching skills relevant to TPC, but these organizations fell beyond the scope of this project and were not mentioned by any participants. However, it is likely that some of the educational work in TPC is being done by business schools at various universities and through courses such as business communication or mass communication. These educational paths may lead practitioners to do TPC work without contact or connections to the STC India organization, which may explain the absence of this data in this study. More research is needed to understand the scope and reach

of such educational opportunities and the professionals who utilize them.

Despite the lack of formal TPC degree availability, practitioners in this study display an impressively high level of education in relevant or adjacent fields. The education levels found in this questionnaire can serve as a way of calling attention to the skilled work of practitioners in India. Although a rise of outsourcing in the early 2000s seemed to challenge the field's sense of relevance within a global marketplace, these practitioners represent a highly educated workforce with formalized training in technical fields that add to the credibility of the field as a whole.

Based on responses, the content knowledge of an engineering degree proved useful to some practitioners. This finding indicates that although there are no formal TPC university degree programs in India (Matheson, 2018), practitioners feel that their engineering degrees are useful in preparing them for the work. Further, they find training afforded by STC India to be beneficial as well. Despite these positive experiences, some still cited a need for basic writing training. Technical writers would like more training in rhetoric and writing from an academic foundation. Given the expectations of parents in India for their children to pursue higher education, especially in the sciences or engineering, the presence of a university-level TPC program would fill the need for educational training and perhaps satisfy the ambitions of engineering-minded students who are interested in communication and writing. Because participants have skills in both engineering/science and writing/communication, any TPC university programs might best be paired within the colleges or departments of engineering or science.

Moreover, any such program would be wise to provide some technological training opportunities. Needs for that instruction might be filled by existing online courses via LinkedIn Learning or other platforms. In addition, academics in the United States, especially those interested in social justice research and teaching, may be inclined to create open-access courses for STC India or individual practitioners. This easily available and affordable training would ultimately benefit the entire field and meet writers' needs for their expertise and education to be recognized across country lines.

Along the lines of training, participants expressed awareness that the future of TPC was likely based in

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automation and multimedia. Such information reflects an awareness of the constantly changing nature of the economy and workplaces, and practitioners are fully aware of how their work is affected by such changes. Their observations signal experience with change and also prompt instructors and current practitioners to continue to stay up-to-date with technological advances, the relationship between technology and rhetoric, and new ways of designing communication. Given that content may increasingly be delivered via video and other interactive mechanisms, practitioners can pivot and apply current expertise to becoming responsible for managing the user experience of these technologies.

Collaborations are increasingly dependent on digital and internet-based communication, meaning that we must continue to embrace new and possibly unfamiliar ways of communicating. Further, the advancing nature of globalization and participant insights of these environments highlight the importance of collaboration strategies. Colleagues who collaborate with each other from transnational locations (or even different areas of a country) are participating in dependent workplace associations; they must continue to be able to give and take in such relationships, being patient and willing to teach each other. The act of learning about updated TPC techniques, cultural awareness, and improved workflow processes is networked between and among workers in various locations. International workplaces mean that teachable attitudes and humility are necessary for successful collaboration.

For all TPC practitioners, these findings have a few implications. First, practitioners in India deserve a high degree of respect, and Euro-western practitioners should develop an increased awareness of the skills and educational backgrounds of colleagues located in India. Second, practitioners can play a vital role in training opportunities for overseas colleagues. They can make them aware of or include them in such opportunities. Third, practitioners must continue to be aware of changes in technology and how it will affect the future of the profession. There is room for practitioners to pivot existing skills around such changes and lead conversations about the relationship between technology and rhetoric. Fourth, good collaboration skills through cultural awareness and humility are necessary for connecting with practitioners around the world.

We reiterate that this study population and the findings are important because scholarship in TPC has privileged Euro-Western narratives (Haas, 2008; Petersen, 2017a). The social justice research turn in the field demands that we work to understand marginalized peoples, broaden our awareness to global concerns and workers, and understand the experiences of others (Petersen & Walton, 2018). We see information about Indian practitioners as significant to understanding local practices within a global field and community. Further, India has the only chapter of the Society for Technical Communication (STC) outside of the United States and Canada (Communities, 2018). It seems prudent and necessary to understand the similarities and differences of workers in the same occupation and within the same professional organization across the globe. This article represents one attempt at doing so and calls for more efforts to do so in the future.

CONCLUSION

The TPC practitioners in this study represent a highly educated and technically savvy workforce who are experts at working in cross-cultural environments. Although writing skills represent their central tasks, Indian practitioners are aware of the need to adapt to technological developments. As such, they are actively engaged in working to obtain and practice diverse skills across a broad number of technologies to preserve their market demand and their professional relevance in a global marketplace. Although these practitioners lack access to TPC-specific training at universities, they are able to leverage particularly high educational accomplishment in technical fields and certificate-level TPC training.

Ultimately, practitioners worldwide should find insights useful to their own work and professional development based on the experiences and knowledge of TPC practitioners in India. This study was limited in scope, and our findings suggest that much additional work is needed to understand TPC work in India. This may include conducting research beyond the STC India, within other professional organizations, and among practitioners who are not affiliated with professional organizations. Further study is also warranted about the ways that formal and informal education serve Indian practitioners. Further, similar

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studies to understand the state of the field should be conducted in other communities of technical communicators around the globe.

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TECHNICAL COMMUNICATION IN INDIA

APPENDIX 1: QUESTIONNAIRE DETAILS

Section 1: Background

1. What is your current primary role in technical communication?
    a. Writer
    b. Editor
    c. Manager
    d. Consultant
    e. Analyst
    f. Educator
    g. Designer
    h. Other: enter answer

2. How long have you been working in the field?
    a. 1-5 years
    b. 6-10 years
    c. 11-20 years
    d. More than 20 years

3. Which professional organizations do you belong to? (Check all that apply)
    a. Society for Technical Communication (STC)
    b. Institute of Scientific and Technical Communicators (ISTC)
    c. International Association of Business Communicators (IABC)
    d. Association for Business Communication (ABC)
    e. IEEE Professional Communication Society (IEEE PCS)
    f. ACM Special Interest Group for the Design of Communication (SIGDOC)
    g. User Experience Professionals Association (UXPA)
    h. Association for Teachers of Technical Writing (ATTW)
    i. National Council of Teachers of English (NCTE)
    j. ACES: The Society for Editing
    k. Interaction Design Association (IxDA)
    l. Others; please list
    m. I do not belong to any professional organizations

4. What is the primary way you stay informed of changes in the technical communication industry?
    a. Professional society meetings/conferences
    b. Professional society publications
    c. Professional society listservs
    d. Networking with peers
    e. Technical books and periodicals
    f. Online publications/internet sites
    g. Social media
    h. Other: enter response here

5. What aspects of your identity impact your workplace experience in technical communication (choose as many as apply to your situation)?
    a. Gender
    b. Race
    c. Skin tone
    d. Caste
    e. Religion
    f. Socioeconomic status
    g. Education
    h. Sexuality
    i. (dis)ability
    j. Age
    k. Family background
    l. Family responsibilities
    m. Marital status
    n. Geographic origins

6. Explain how these aspects of your identity impact your workplace experience? What advantages or disadvantages do you face because of the identity markers you identified?
    a. Open ended question

7. What is your educational background?
    a. Bachelor's degree in Engineering
    b. Master's degree in Engineering
    c. Bachelor's degree in Science
    d. Master's degree in Science
    e. Bachelor's degree in Literature
    f. Master's degree in Literature
    g. Ph.D.
    h. Other: enter response here
    i. none

8. How did you become a technical communicator?
    a. Open ended question

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Section 2: State of the Field

9. Rank in order five of the following skills that you think are most important to the success of a technical communicator?
    a. Writing
    b. Editing
    c. Researching
    d. Organizing information
    e. Project management
    f. Publishing tools
    g. Social media
    h. Web design
    i. Video creation
    j. Print document design
    k. Usability
    l. User experience
    m. Information architecture
    n. Interviewing
    o. Political savvy
    p. Data visualizations
    q. Programming
    r. Technical skills/knowledge
    s. Leadership
    t. Other: enter response here

10. How significant a role does technical communication play in your company/industry?
    a. Vital to the success of company/industry
    b. Important to the success of company/industry
    c. Somewhat important to the success of company/industry
    d. Not important to the success of company/industry
    e. Technical communicators are expendable

11. How have online social networking platforms changed the way you perform your work?
    a. Open ended question

12. What has changed most in technical communication in the last five years?
    a. Open ended question

13. How do you work with technical communicators from other countries?
    a. email
    b. video messaging
    c. Instant messaging
    d. In person
    e. Through a manager
    f. Other: answer here
    g. Not applicable to me

14. What have you learned from colleagues in other countries?
    a. Open ended question

15. What have you taught colleagues in other countries?
    a. Open ended question

16. How much authority do you have in your organization?
    a. None
    b. My suggestions are sometimes listened to and implemented
    c. My suggestions are often listened to and implemented
    d. My suggestions are always listened to and implemented
    e. Other: please explain

Section 3: Future of Technical Communication

17. What do you see as "the next big innovation" in technical communication?
    a. Open ended question

18. What do you think technical communicators will be doing 5 to 10 years from now?
    a. Open ended

19. What can technical communicators do to ensure that their role in workplaces continues to be important and valuable in the future?
    a. Open ended question

20. How do you and other technical communication professionals innovate in your workplace?
    a. Open ended question

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21. What is the most innovative thing you and your team are currently working on?
    a. Open ended question

22. How important are localization and translation to your work?
    a. Open ended question

23. How have alternative working arrangements (e.g. work from home, contract labor, shorter hours) impacted your work?
    a. Open ended question

Section 4: Management Issues
24. Are you a manager of a technical communication team?
    a. Yes
    b. No

25. If yes, they get the rest of these questions: What is one of the current challenges you face as a manager?
    a. Open ended question

26. How do you develop your staff's competencies?
    a. Meetings/conferences
    b. Tools training
    c. Professional skills training
    d. Project management training
    e. Technology training
    f. Industry training
    g. Design skills training
    h. Other: enter response here

27. How is this training given?
    a. Online modules/videos
    b. Meetings led by me or another colleague
    c. Guest lecturers/teachers
    d. Other: please explain

Section 5: Education
28. What kind of education/training do technical communication professionals entering the field need to have before starting a career (choose as many as apply)?
    a. Certificate or degree in technical communication
    b. Degree in any field
    c. Experience working in a technical field
    d. Experience working in editing or writing
    e. Design training
    f. Software and tools training
    g. Mentorship from other professionals
    h. Training from an online source
    i. Training from professional conferences and meetings
    j. Other: enter response

29. What academic training has been most helpful to you?
    a. Open ended question

30. How should the training of technical communicators change to fit the innovations and changes of the industry?
    a. Open ended question

31. What is the hardest skill to teach/learn in technical communication?
    a. Open ended question

32. What kind of training do you wish was available to you?
    a. Open ended question

A Scheme for Understanding and Writing Summaries

By David K. Farkas

ABSTRACT

Purpose: Writing a summary is not necessarily a straightforward task. Presented here is a scheme of twelve descriptors that reveals much of the complexity of summaries. The scheme can also serve as a design heuristic.

Method: The scheme draws upon the psychology of text processing and applied linguistics, and derives theoretically from the intertextual relationship between the summary and the summarized text and the contrast between summary as microcosm (miniature of the summarized text) and the many ways in which summaries are not microcosmic.

Results: The scheme consists of these twelve descriptors. The **Purpose** of the summary. The possibility of a **Specification constraint** that complicates the writing of the summary. **Reduction,** the length of a summary as a ratio of the summarized text. The **Phrasing**—informative or descriptive—of the summary. **Proportion and Exclusion,** how fully each part of the text is represented in the summary. **Structure,** how the ideas in the summary are arranged in relation to the text. **Placement,** where in relation to the text (before, after, within, alongside, or independent of) a summary (or multiple summaries) appears. **Addition,** the possibility of adding content not in the text to the summary. **Authorship,** whether the author of the text (or an associate) or someone not associated with the text wrote the summary. The **Stance, Style,** and **Format** of a summary.

Conclusion: The scheme advances our understanding of summaries and, especially when used as a heuristic, can help technical communicators in their work. It may also be the basis of further research.

Keywords: summarization, summary writing, abstracts, design, heuristics

Practitioner's Takeaway:

- There are many kinds of summaries other than those that appear at the beginning of a document. Also, while it's easy to assume that summaries are written as simple miniatures of the document, this is often not the case. In fact, there is considerable variation and much recent evolution in the writing of summaries.

- Presented here is a scheme of twelve descriptors that—with their accompanying discussions—provides a comprehensive and up-to-date look at summaries.
- The descriptors also function as a design heuristic that enables better summary writing and innovative design.

UNDERSTANDING AND WRITING SUMMARIES

INTRODUCTION

Summary writing may at first seem a straightforward task requiring no more than basic textbook knowledge and an acquaintance with familiar models. In fact, summaries are complex and vary along many dimensions. They are written to fulfill multiple purposes and to meet diverse constraints. Also, the documents we summarize belong to very different genres and, even within a genre, differ greatly.

Because summary writing is a complex task, technical communicators should be able to draw upon a comprehensive understanding of summaries and a wide range of design strategies when they plan and write a summary. I therefore set forth a scheme consisting of twelve rhetorically focused descriptors. The scheme is, first and foremost, a conceptual description and synthesis of much of what we know about summaries. It can also serve as a design heuristic that can help technical communicators and all professionals who write summaries identify a wide range of useful design strategies, both familiar and unfamiliar. Each descriptor prompts design thinking about a particular aspect of writing a summary. The scheme may also contribute to further research and support teaching.

This scheme applies across genres to summaries of all kinds, from research article abstracts, to the longer executive summaries that precede reports, proposals, business plans, and other organizational and business documents, to the brief summaries that appear before articles in news magazines, both in print and on the Web. These and other before-the-body summaries are separate components that are visually bounded from the body of the text through such means as box borders, a distinctive font, and extra spacing. But the scheme applies as well to the reviews that, especially in instructional documents, are visually bounded components that follow the body of the text.

Furthermore, the scheme applies to the unbounded summaries we embed *within* the body of a document: Unbounded summaries are regularly embedded within the introduction of a document, where they preview the main ideas, and they are often embedded within the conclusion of a document, where they review the main ideas. Indeed, unbounded summaries can be embedded anywhere in the body of the text, and they can either summarize some or all of the preceding content (signaled by such phrases as "Summing up what has been said so far") or preview some or all of the upcoming content.

Here is a capsule presentation of the scheme:

- **Purpose:** What is the purpose or purposes of the summary?
- **Specification constraint:** Must the summary be written according to a gatekeeper's specification, or is it unspecified?
- **Reduction:** What is the ratio, in word count or by some other measure, of the summary to the summarized text? How was the reduction accomplished?
- **Phrasing:** Is the summary written with informative or descriptive phrasing or a mixture of both?
- **Proportion and Exclusion:** Is each part of the summarized text reduced by the same amount? Is any important content excluded from the summary? What are the reasons for improportion or exclusion?
- **Structure:** How is the summary organized in relation to the text? How closely does the sequence of ideas in the summary map the sequence in the text?
- **Placement:** Is there a single summary that appears before the body of the text (the default), a review that appears after the body of the text, or multiple summaries distributed within the body of the text or in the margins? Is the summary a free-standing module that excludes references to the text?
- **Addition:** Is the content of a before-the-body summary strictly limited to what appears in the text? Is there any new content? Does a summarizing conclusion add new thoughts about the broader implications of the topic or point to future developments?
- **Authorship:** Was the summary written by the author of the text or an associate? Or, was it written by a commentator or someone else with no direct connection to the text?
- **Stance:** Is there a difference in stance between the summary and the text? How did this difference come about? What are the consequences?
- **Style:** How do the style of the summary and the stylistic differences between summary and text affect the reader?
- **Format:** How is the summary formatted and how do the format elements impact the reader's experience?

David K. Farkas

PRIOR WORK

The research on summarization and summaries is vast and varied. Much of the research comes from the fields of psycholinguistics and educational psychology, often deriving from the model devised by Kintsch and van Dijk (1978) of the creation of macropropositions through the macrorules of deletion, selection, generalization, and construction. This model has been modified and adapted by subsequent researchers (Brown & Day, 1983; Sherrard, 1989; Li & Hoey, 2014), and this broad line of research encompasses the processes and strategies entailed in writing summaries (e.g., comprehension, condensation, and production of a new text), how these linguistic skills develop, and how best to teach these skills in school settings (Kintsch & van Dijk, 1978; Sherrard, 1989; Brown & Day, 1983; Westby et al., 2010).

From the perspective of text processing, psychologists study how summaries, functioning as signals and advance organizers, improve comprehension and retention (Mayer et al., 1984; Kardash & Noel, 2000; Lorch & Lorch, 1996; Lemarié et al., 2008). Applied linguists, often with an interest in training early career researchers and L2 (second language) speakers of English, study research article abstracts at a very fine-grained level, often using genre move analysis (Swales, 1990; Swales & Feak, 2009; Ayers, 2008; Breeze, 2016; Samraj, 2005; Stotesbury, 2003; Supatranont, 2012). Other researchers with an interest in the enterprise of science (often medical science) also focus on research article abstracts (Berwanger et al., 2009; Dupuy et al., 2003). Information scientists study how successfully abstracts return literature citations when users conduct keyword searches of databases (Lin, 2009). Computer scientists in machine learning and related fields are trying to improve the ability of computers to summarize text (Lloret & Palomar, 2012).

In the field of technical and professional communication, most work on summaries and abstracts takes the form of textbooks and books on writing up research for publication (e.g., Mogull, 2018; Montgomery, 2003). These treatments are necessarily brief and are based on familiar models. The specifications of summaries in published guidelines are usually—though not always (JAMA Network, 2019)—brief and narrowly tailored to the specific publication. The American National Standards Institute/National Information Standards Organization (ANSI/NISO) (2015) standards document *Guidelines for Abstracts* only codifies familiar models and covers only a limited number of text features. I draw upon much of this prior work, in particular, that of psychologists who study text processing and that of applied linguists.

This investigation, however, is distinct from all prior work I have seen because it addresses the challenges faced by writers and information designers, looks closely at many summary features and design options, and encompasses a very wide range of summaries. Also, this scheme makes clear that many design issues apply to a broad range of summaries. Most research overlooks the commonality underlying diverse summaries (e.g., bounded vs. unbounded summaries), and so we fail to apply what is known about writing one kind of summary to the writing of other kinds.

MOTIVATION, THEORY, AND METHOD

A significant part of my recent academic work has been motivated by the conviction that those who wish to communicate substantial textual content must reckon with readers' increasing resistance to long texts and that facilitating selective reading within a document and improving the effectiveness of summaries will therefore become increasingly important (Zhou & Farkas, 2009; van der Meij et al., 2013; Farkas & Raleigh, 2013). The starting point of this project was the observation that while a summary can be written as a microcosm (miniature) of the full text, summaries very often differ from the full text along numerous dimensions. Indeed, present-day summaries appear to be increasingly less microcosmic.

The reasoning underlying the project is that the idea of a summary as microcosm directs us to the ways in which many of the summaries we write are not microcosms—and why. That is, there are reasons why an individual writer or a particular organization or discipline chooses a proportionality, structure, or rhetorical stance that is different from that of the summarized text. Therefore, a systematic look at how summaries are very often not microcosms should lead to a better understanding of summaries and, hence, better summary writing and innovative design.

My method was a two-year process of analysis and classification, based on an informal but wide-ranging survey of summaries—every kind of summary I could

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recall from over 40 years working in this field; a fresh examination of how summaries are currently written in most major genres of professional writing; and a systematic review of the academic and professional literature on summaries and summarization.

I made a provisional list of the text features and other design considerations that differentiate the broad universe of summaries. This became my scheme of descriptors. Through an iterative process, I sought to make the scheme truly comprehensive and to make the individual descriptors distinct, meaningful, and useful. I did not construct a study sample of summaries according to highly specific criteria so as to draw a limited number of highly focused conclusions using descriptive statistics—a research method known as corpus linguistics. Nor was my focus on how specific genres of documents are summarized, but rather on summarization in its most general form. Most of the descriptors are based on widely recognized aspects of summarization. However, the options embodied in the Placement descriptor have largely been overlooked, and Addition has only recently drawn the attention of researchers after the wide adoption of non-specialist synopses.

An invitation to talk about summaries in a graduate seminar led me to more carefully consider and articulate the theory that was guiding my thinking, and the more refined theory aided in my ongoing analysis. I recognized that the summary as microcosm idea is an instance of the broader concept of intertextuality— the idea that texts may be related to one another in important ways (Orr, 2010). While each summary is certainly a unique text crafted to succeed in its own rhetorical circumstances, it is equally true that summaries are closely tied to their summarized text (Heard, 2016; Holtz, 2009; Hyland, 2005; Samraj, 2005). Indeed, in the world of professional documents, there is hardly a closer relationship than that between a summary and the summarized text. This makes clear why several of the descriptors (e.g., Reduction, Proportion and Exclusion, and Addition) are meaningless except in relation to a summarized text and why other descriptors (e.g., Purpose, Style, and Format), while characteristic of all texts, are discussed within this scheme primarily in regard to the close and derivative relationship between summary and text. The following two considerations both support and are foregrounded by the idea of intertextuality:

- Readers notice significant differences as they transition from summary to text (or from text to summary). The difference can be dramatic, for example, when a reader transitions from a findings-first abstract to a standard research article.
- Authors write their abstracts and other summaries with much attention to a completed (or mostly completed) text they have labored over.

This statement of method and theoretical rationale still leaves open an important question: Why these twelve descriptors and not others? The best response is that complex domains such as summaries can be conceptually divided in multiple ways, and no one way is the "correct" one. Certainly, the theory that guided my analysis is nowhere near strong enough to yield a definitive set of descriptors. Rather, the appropriate test for the twelve descriptors presented here, or for a competing set of descriptors, is how fully, meaningfully, and usefully they reveal the complexity of the domain of summaries, while being crisply differentiated and sufficiently limited in number to be manageable in application. The proof is in the pudding. Consider, for example, that this scheme might have included the descriptor "Improving retention," but this potential descriptor was folded into the broader Purpose descriptor. The descriptor with the least practical application is Authorship, but it is included because it adds significantly to the conceptual breadth of the scheme.

The twelve descriptors belong to two categories. Nine are text variables, actual features of texts that can be manipulated in the writing process. But Purpose, the Specification constraint, and Authorship are circumstances that surround and precede the creation of summaries. Purpose is a central consideration in planning a summary. Likewise, if the summary must adhere to a gatekeeper's specification, this too is an important planning consideration. Authorship— whether you are summarizing your own or another person's text—impacts the writing process.

THE SCHEME AS HEURISTIC

Months after teaching the graduate seminar, I gave a presentation to working technical communicators about writing effective summaries. The process of planning the presentation along with an informal follow-up

discussion with several audience members led me to see that the scheme could serve as a design heuristic.

The scheme is a design heuristic of a specific kind. Many design heuristics, including collections of design patterns, are explicitly prescriptive and, often, research based—for example, the HHS Web Standards and Usability Guidelines (2019). Note, however, that the highly prescriptive Journalist's 5 Ws (Who, What, Where, When, Why) is supported by venerable tradition and rhetorical theory but not by empirical research. Another category of heuristics, that of invention heuristics, is non-prescriptive but instead supports deep engagement with the subject matter and creative thinking. Invention heuristics include the particle, wave, field perspective (Young et al., 1970), and cubing (Axelrod & Cooper, 2012, pp. 322–323).

This scheme, in its function as a heuristic, is fundamentally non-prescriptive. It calls attention to design considerations which the writer can then address using his or her own background and experience. I do, however, offer some judgments about the good and bad design of summaries.

As a design heuristic, the scheme can assist students, early career researchers, and workplace writers when they write specified or unspecified summaries. In addition, the heuristic can assist expert writers, publications managers, content strategists, and others who are tasked with specifying a summary, re-thinking a specification, designing a summary for a special situation, or attempting to innovate broadly. For use as a heuristic, the scheme can be modified to suit the background and needs of those who will use it. The conceptual parts of each of the twelve discussions can be trimmed, the Authorship descriptor can be deleted, and the heuristic can be narrowed in scope so that it applies only to abstracts, executive summaries, and other before-the-body summaries. Following my discussion of the twelve descriptors appear brief scenarios that demonstrate how the scheme can be used as a heuristic.

PURPOSE

Summaries serve various purposes, and the chosen purpose or purposes will govern many design decisions. One purpose is filtering: Often, readers read a summary, decide whether or not the topic is relevant to their needs, and, if so, decide whether to read the full text or

whether the summary itself is sufficiently informative. In other instances (for example, abstracts of journal articles that are only available to online journal subscribers), a summary must suffice for some readers because the text is unavailable. When readers read both the summary and the text, the previewing function of the summary can improve the reader's comprehension and retention of the text (Lorch & Lorch, 1996; Mayer et al., 1984).

When summaries map the structure of the text, readers can use the summary to find the section containing specific information they are interested in. Some summaries, as shown below, are specifically designed to support selective reading within a text. Readers can comfortably bypass sections of the text that interest them less on the basis of what they have learned about the content of those sections from reading the summary. Reviews very often appear in textbooks and training materials as an after-the-body component. Their purpose is to improve retention.

THE SPECIFICATION CONSTRAINT

Many organizations issue or reference guidelines specifying how the before-the-body summaries of documents prepared for that organization are to be written. Writers of such summaries may find the specifications burdensome. Of course, other kinds of documents written in organizational settings are often written to specifications, but special problems may arise in summary writing because summaries are so closely tied to an existing text. Problems are especially likely to arise if the document being summarized diverges in some way from the class of documents the specification of the summary was devised for. For example, if the specification states that summaries should be "objective" in regard to their stance, but the summarized text is explicitly polemical, the summary writer is caught in this divergence. Similarly, when a specification mandates a structure for the summary that is different from the structure of the text, the summary's structure may be an awkward fit with that of the summarized text.

Summary writers should consider how much leeway they have in interpreting the specification or, in certain situations, should ask for an exemption from the burdensome part of the specification. But often they will need to deal creatively with certain specification constraints. For example, if a guidelines document

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specifies one-paragraph abstracts, and the text divides sharply into multiple sections, the summary writer may look for a way to reveal the structure of the text within the summary. Further implications of the specification constraint are noted below.

REDUCTION

The length of a summary in relation to the text largely determines how much information the summary conveys. Therefore, reduction, meaning the degree of reduction, strongly influences the uses of a summary. For example, a reader with only a moderate interest in a topic may well be able to satisfy their information needs by reading a 250-word summary, but this is less likely if there is only a 100-word summary. On the other hand, when summaries are long, a reader confronted with numerous summaries may choose to read fewer of them.

In many situations, summary writers make their own decisions about how long a summary should be, but still more often the summary's length is specified by guidelines. But whether the limit has been imposed by a guideline or represents the author's best judgment, limiting the length of a summary is a necessary and often challenging task. In creating a summary, the writer selects the most important ideas in the text. The threshold for "important" is a function of the length and the information density of both the text and the summary. For example: The threshold for inclusion will be much higher (ideas must be more important) for a 200-word vs. a 500-word summary—especially so if the summarized text is a dense 50-page engineering document versus a more casually written 20-page project update. Importance, furthermore, should be generally understood to mean the most important (superordinate) ideas in the summarized text in preference to what the summarizer judges to be important to the reader. However, as we will see below, rhetorical considerations may result in summaries that depart—sometimes quite dramatically—from expressing the summarized text's superordinate ideas.

In conjunction with selection, the ideas in the summarized text are condensed through various stylistic means. These include generalized phrasing in place of a set of specific items, tighter syntax (including nominalization), and making larger assumptions about the relevant background knowledge the audience brings to the text (Holtz, 2009; Kintsch & van Dijk, 1978;

van Dijk, 2003). My summary of Lincoln's "Gettysburg Address," though very brief, should still be meaningful to an educated United States audience because these readers presumably know that Abraham Lincoln, President of the United States during the American Civil War, is speaking about the great many Union soldiers who died in the crucial battle that took place in Gettysburg, Pennsylvania:

> Lincoln's message was simple: Only by dedicating ourselves to winning the war will we keep faith with those who gave their lives to preserve liberty and equality.

In regard to condensation, the single most consequential decision is whether to employ standard informative phrasing, descriptive ("indicative") phrasing, or a mixture of the two. Descriptive phrasing, the basis of the familiar descriptive abstract, much reduces a summary's length because descriptive phrasing only indicates what can be found in the text (ANSI/NISO, 2015; Paradis & Zimmerman, 2002). In this next example, we do not learn the actual relationships that are referred to: "This study identifies relationships between the physical and genetic characteristics of bones in mice." When used consistently, descriptive phrasing limits the purposes served by the summary: The summary does well at performing the filtering function, but it cannot substitute for reading the text. Because executive summaries are especially likely to be read in place of the text, executive summaries are not only relatively lengthy in relation to the text (mild reduction), but they primarily use informative phrasing.

Reduction in all its forms comes at a price. Less of the content of the summarized text is communicated, there is more potential for misunderstanding, and inadequacies in the writing style may arise. Specifically, two big problems that may occur are decreased readability and alterations of meaning arising from the elimination of hedging words. For example, "can lead to" becomes "leads to." The implications of reduction will be discussed further as we proceed.

INFORMATIVE VS. DESCRIPTIVE PHRASING

The distinction between informative and descriptive phrasing was introduced as a stylistic technique for

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reduction, which it is. But I classify this distinction as a separate descriptor within this scheme because it is so consequential: A summary that tells you what you will learn by reading the text is very different from a summary that provides immediately useful information.

When a specification does not call for either informative or descriptive (indicative) phrasing, authors should take note of this extra flexibility. A good strategy, I suggest, is to favor informative phrasing in the interest of communicating more information to the audience, but to strategically switch to descriptive phrasing when greater reduction is necessary to summarize especially complex parts of the text (especially if they are of lesser importance) and in other instances when ideas in the text resist informative phrasing.

Reviews typically appear as components of textbooks, training manuals, online tutorials, and other documents with an explicit goal of retention. They may be written with informative phrasing or may exploit the reader's familiarity with the text and use descriptive phrasing. The distinction between informative and descriptive phrasing reappears in different contexts below.

PROPORTION AND EXCLUSION

Proportion is the comparative level of detail of the ideas in the summary in relation to the level of detail of those ideas as they appear in the text. The naïve assumption is that a summary is a microcosm that, fractal-like, retains the text's original proportions by reducing all parts of the text to the same degree. However, although accurate proportion serves readers well in many situations and is often specified (or simply assumed), both summary writers and gatekeepers often have reasons to depart from accurate proportion. The most extreme improportion is the outright exclusion of an idea that a judicious reader or a capable computer algorithm would rate as superordinate.

One reason for improportion is simply that some ideas cannot be summarized as concisely as others and will therefore require a disproportionately lengthier explanation in the summary, unless descriptive phrasing is used.

In other situations, a gatekeeper or summary writer may decide that the goals of readers of a summary are sufficiently different from the goals of those same individuals as readers of the text to warrant different proportions. This difference in goals often arises in

regard to the Methods section of research articles, which may be disproportionately briefer or entirely omitted in the abstract (Samraj, 2005; Ayers, 2008). Such improportion presumably arises because methods are often routine or standardized and because the reader of the abstract initially assumes that the research is methodologically sound and recognizes that, in any case, identifying problems with the methods will require a careful examination of the article.

The introductions of many documents include a preview of the upcoming sections, but these summaries routinely exclude the conclusion section if the conclusion section does nothing more than summarize the main ideas.

Extreme improportion also occurs in some "promotional abstracts" that appear in websites advertising the presentations in professional or trade conferences. The writers of this kind of abstract are usually consultants, industry experts, or representatives of a vendor but may be academics as well. A great many abstracts of all kinds, mirroring the text, follow a problem-solution structure (Jordan, 1988). These include the abstracts of research articles, because the canonical IMRAD pattern of research articles (Introduction, Materials and Methods, Results, and Discussion) or something similar itself embodies a problem-solution structure. Below, we see the problem-solution structure in a promotional abstract for a presentation to be given at a Gartner conference. While the abstract explains in relative detail a significant problem faced by members of the audience, the abstract, switching to a higher level of reduction and to descriptive phrasing, provides scanty information about the solution:

The Evolution of Sales Development Reps to Support B2B Demand Generation

B2B companies are increasingly relying on sales development reps (SDRs) to support their demand generation and prospecting efforts, but the success of these teams varies widely from company to company. In this session, you'll learn how to enable SDRs for success and why quality matters more than quantity. (Berkowitz, 2018)

A summary of Berkowitz's presentation posted by Gartner after the presentation indicates that Berkowitz's

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presentation, unsurprisingly, focused on solutions (Bryan, 2018).

There are other rhetorical strategies that can lead to exclusion in a summary. A writer addressing a lay audience might omit from a summary an important but dauntingly complex idea in order to draw readers into the text. This practice, I suggest, is ethical if the summary employs a heading or other descriptive phrase which signals that the summary is highly selective: "Things you will learn in this article." Finally, taking on the perspective of genre moves, we note that both aggressive reduction and improportion and exclusion often result in abstracts that contain only a subset (sometimes just purpose and results) of a research article's genre moves (Swales & Feak, 2009).

STRUCTURE

Structure is the arrangement of the ideas making up the summary. In this scheme the emphasis is on the difference between the structure of the summary and the structure of the text. Note that structure is distinct from proportion. For example, you can change the proportions of a summary without changing the structure, much as the structure of a sandwich remains the same (bread, avocado, bread) regardless of whether the bread slices are thick or thin or how much avocado is inside. Conversely, you can re-arrange the parts without changing the size of the parts.

Mapping

One broad and far-reaching design choice regarding structure is mapping: organizing the summary so that its structure (whether understood in terms of major topics, structural divisions, genre moves, etc.) corresponds to that of the text. In the case of before-the-body summaries, gatekeepers often specify or at least imply mapping. In addition, reviews and other kinds of summaries are very often mapped. Both readers and writers of summaries, unless they have been conditioned by reading unmapped summaries, will assume that summaries map texts; and, very often, the logic of the summary will require at least parts of the summary to map the text.

Various factors result in loose mapping. When texts are informally structured or, as in many humanities texts, when they employ an elaborate but inexplicit

structure in which the author returns to ideas developed previously, only loose mapping is possible.

Reduction can also require looser mapping, even when texts are rigorously and explicitly structured. Envision a text organized with these topics and subtopics: (**Introduction**) ($A^1 A^2 A^3$) (C^1) ($B^1 B^2 B^3$) ($C^2 C^3$) ($D^1 D^2 D^3$) (**Conclusion**). Subtopic C^1 has been moved from its natural and expected location because subtopic B^1 cannot be made clear unless the groundwork has been laid by ideas contained in C^1. The author of the article will likely explain this departure from the expected sequence of topics, and readers will have no difficulty with it.

In the summary, however, B^1 has been condensed along with B^2 and B^3 into the broader idea **B**, and C^1 has been condensed along with C^2 and C^3 into the broader idea **C**. Nothing in this condensed **B** requires any information from **C** as a prerequisite, and the summary writer is now free to follow the natural and expected sequence of ideas: (**Introduction**) (**A**) (**B**) (**C**) (**D**) (**Conclusion**). Readers will likely not notice that the sequence of ideas in the text differs slightly from what they read in the summary. We can say, then, that complexity in the organization of the text has been "smoothed out" in the much briefer summary.

Unmapped Summaries

Many summaries do not map at all. Aggressive reduction can cause writers to abandon mapping. The brief summary of Lincoln's "Gettysburg Address" that appeared above reverses the sequence of the main ideas in Lincoln's speech.

Summaries can be planned around a structure that is fundamentally different from that of the text. The ANSI/NISO standards document for abstracts (2015) allows for a "results-oriented" arrangement in which the most important results and conclusions are placed first. The JAMA Network's "Instructions for Authors" (2019) specifies numerous structures for JAMA network research articles and various structures for the abstracts that do not map the structures of the articles. As the JAMA Network's "Instructions for Authors" suggests, the myriad possibilities for unmapped summaries are an avenue for innovation in the design of summaries.

Although rhetorical considerations may well justify unmapped summaries, it is probable that the recall of the complete text (both summary and text together) decreases when the mental model of the

content structure that the reader creates from reading a summary is not carried through in the text (Meyer & Poon, 2001; Ritchey et al., 2008).

PLACEMENT

As we have seen, bounded summaries can appear before or after the body of the text, and unbounded summaries can appear within an introduction, within a conclusion, or anywhere else within the body of a text. Here, we look at three other placement options: multiple within-text summaries, marginal summaries, and free-standing summaries.

Multiple Within-Text Summaries

Multiple summaries may be placed before chapters, sections, or other divisions within a text. A website in which a summary appears on each page (except for the introductory page) is shown in Figure 1 (BBC News, 2002).

Figure 1. A website in which a summary appears on multiple pages

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This and similar multiple-summary designs serve the purpose of supporting selective reading. That is, for each of the events described on the website, the reader is invited to read just the summary, the text, or both. To support selective reading effectively, the reduction in length must be mild (longish summaries). This is to ensure that a reader who has chosen to read only the summaries on several of the webpages has accumulated enough information to be able to productively read the full text of a later section (Farkas & Raleigh, 2013). QuikScan is a similar, though more elaborate, multiple summary design whose benefits have been established through empirical research (www.quikscan.org/research, 2019; van der Meij & van der Meij, 2011).

Marginal Summaries

Multiple summaries may be placed alongside the text in wide page margins. This practice is rare today but was more prevalent in past centuries. These days, wide page margins usually contain relevant factoids and definitions, most famously in Richard Saul Wurman's *Information Anxiety* (1989), or else contain

definitions and tips (as in certain computer manuals). Figure 2 illustrates the informatively phrased marginal summaries that authors can write for their documents, most likely in conjunction with a conventional abstract.

Much like multiple within-text designs, these marginal-summary designs support selective reading, as long as the reduction is mild. Marginal summaries also help readers find specific ideas in the text by scanning the marginal summaries. If descriptive phrasing is used, the marginal summaries will not support selective reading, but they can be greatly reduced in length.

Free-Standing Summaries

Finally, a great many summaries are written so that they can be read independently, and so the free-standing summary becomes an additional category, an overlapping category, within the Placement descriptor. Research journals often specify in their author guidelines that abstracts must be free standing. Thus, the guidelines—in addition to specifying informative phrasing—prohibit in-text citations to items in the article's reference list. If an item in the reference list
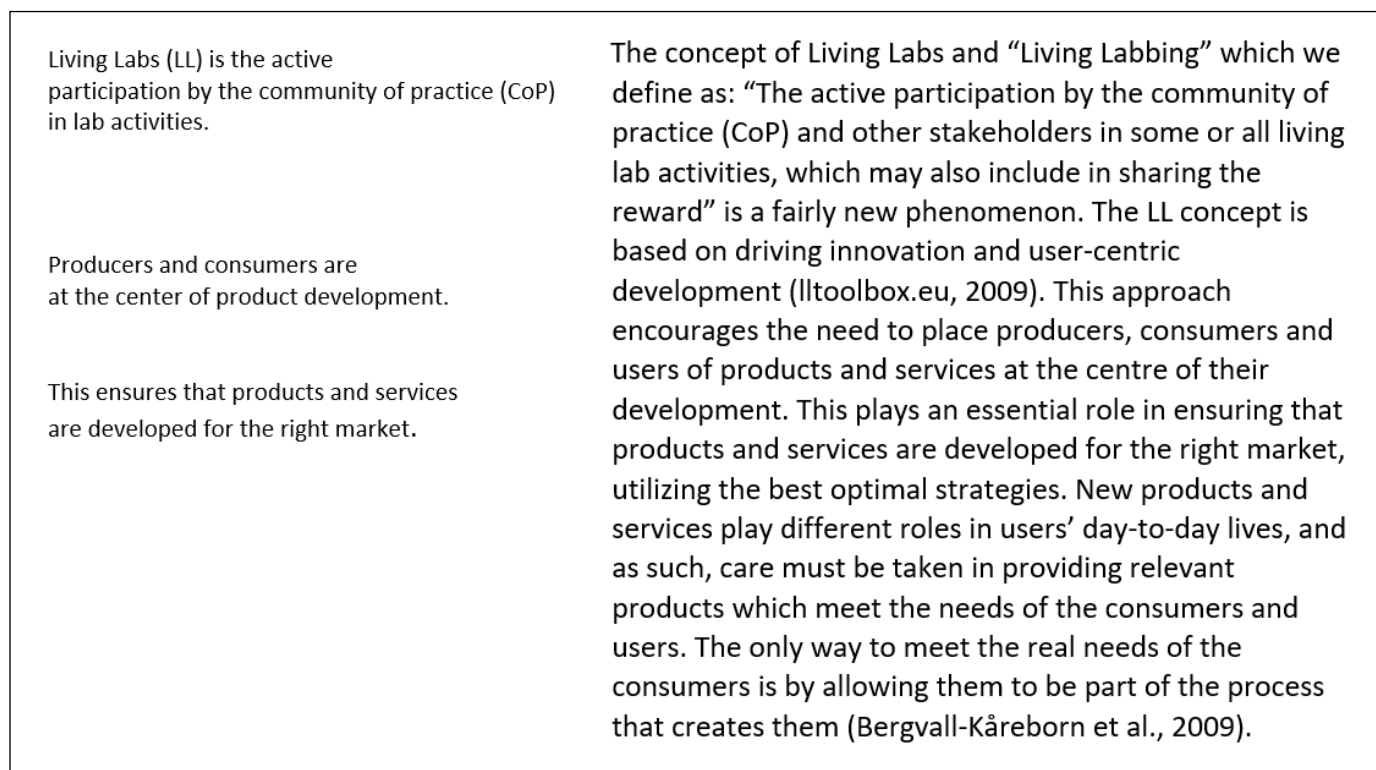

Living Labs (LL) is the active participation by the community of practice (CoP) in lab activities.	The concept of Living Labs and "Living Labbing" which we define as: "The active participation by the community of practice (CoP) and other stakeholders in some or all living lab activities, which may also include in sharing the reward" is a fairly new phenomenon. The LL concept is based on driving innovation and user-centric development (lltoolbox.eu, 2009). This approach encourages the need to place producers, consumers and users of products and services at the centre of their development. This plays an essential role in ensuring that products and services are developed for the right market, utilizing the best optimal strategies. New products and services play different roles in users' day-to-day lives, and as such, care must be taken in providing relevant products which meet the needs of the consumers and users. The only way to meet the real needs of the consumers is by allowing them to be part of the process that creates them (Bergvall-Kåreborn et al., 2009).
Producers and consumers are at the center of product development.	
This ensures that products and services are developed for the right market.	

Figure 2. Informative summaries placed in margins alongside a research article (Buitendag et al., 2012)

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must be mentioned in the abstract, an abbreviated reference, not a citation, is provided.

As a negative example, envision a social scientist who has completed the draft of a book but decides to modify the first chapter so that it is more likely to be included in print or electronic course packs in university courses. He greatly reduces contextual content that served as background for the subsequent chapters and deletes all allusions to the subsequent chapters and to the book as a whole. He has turned his introductory chapter into a free-standing summary and a microcosm of the rest of the book. But it is less effective as an introduction.

ADDITION

Addition refers to adding information to a summary that does not appear within the text (or, in the case of summaries embedded in the body of the text, does not appear in any other part of the text). At first glance, adding any new content to a summary seems antithetical to the notion of a summary, but certain additions are allowed and even specified.

One form of addition is adding information to before-the-body summaries. The executive summaries of reports primarily intended for specialists are often written for generalist audiences such as managers with broad responsibilities and elected officials, such as city council members. Therefore, guidelines for executive summaries may cautiously indicate that summaries may provide additional content in the interest of making the summary easier to understand. The Oxfam guideline on writing executive summaries states that "the summary is the bridge between the often-technical arguments and findings of the main report, and the target audience, whether media, decision makers or aid professionals" (Green, 2015).

Breeze (2016) describes non-specialist synopses, which are gaining popularity, primarily as a supplement to standard research article abstracts. They are meant to communicate with a broader audience. Non-specialist synopses include context, explanations, and examples and may conclude with an explanation of the relevance of the research—all of which may not be present in the article itself. The *Journal of Bacteriology* (American Society for Microbiology, 2019) requires abstracts to include a separate "Importance section" that provides "a nontechnical

explanation of the significance of the study to the field." Such additions are valid and useful provided that they do not in any way misrepresent the text.

The minutes of major civic meetings held in a public setting will likely summarize, without additions, all the important ideas that were expressed. But when small civic bodies meet without outside attendees, it is often necessary for the writer of the minutes to supply information that was known to the meeting participants and was therefore left unstated during their discussion. Below is a (modified) excerpt from the minutes of a meeting of the commissioners of a small city. Their discussion of the successful grant application was far more fragmentary than the "filled out" rendition we see in the minutes:

> The city has been awarded a $10,000 grant from the King County Conservation District. Trees will be planted in Blue Heron Park to replace invasive trees and the trees that were removed because they were interfering with power lines. This will serve as a demonstration project, with interpretive signage explaining what trees should be planted in right-of-way areas. The trees will be planted in March or April.

Some conclusions are strictly summaries. But many conclusions blend summarization with additional information as they make reference to the broader implications of the topic or point to future developments.

AUTHORSHIP

Most summaries are written by the author of the summarized text or by an associate. However, one can write a summary of another author's text. Therefore, we distinguish between an authorial and a non-authorial summary. My brief, non-authorial summary of Lincoln's "Gettysburg Address" was written more than 150 years after Lincoln's death rather than by Lincoln or a staff member.

Non-authorial summaries are generally embedded in the document of the writer who wrote the summary and, generally, are blends of summary and interpretive commentary. For example, my summary of the "Gettysburg Address" reads as though it were part of an interpretive discussion of the speech or the historical

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context of the speech. Book and movie reviews embed summaries into the reviewer's text and most often fully blend the summary with interpretive commentary. On the other hand, this non-authorial, unbounded summary does not blend summary content with interpretive content:

> Before discussing Joseph Browne's ideas about infectious diseases, I will summarize his *Practical Treatise on the Plague*, written 1720.

Note that like the Purpose descriptor and the Specification constraint descriptor, authorship is not a design choice. Rather, it is a matter of circumstance whether one is summarizing one's own ideas or summarizing another author's text. However, the decision whether or not to blend a non-authorial summary is a design choice.

STANCE

Stance is a broad concept that encompasses a writer's presentation of self and the writer's attitude toward the content of the text and the audience (Hyland, 2005). A writer, for example, might take an impersonal or a personal stance and might present the content as either a collegial contribution to or as a radical departure from the research, thinking, or values of a discourse community. In discussing a text written by another author, a neutral stance, a mildly or strongly laudatory stance, a disparaging stance, or some other stance is possible. Now we consider stance in regard to a summary and the summarized text.

The stance of an authorial summary, as we would expect, is almost always similar to that of the summarized text. The expectation is that the same authorial voice is addressing us at two different levels of detail. Even so, differences are certainly possible. First, using the terminology of Hyland (2005), the pressure for reduction can lead authors to delete hedging words (thereby accentuating the stance) or delete boosters (thereby moderating the stance). Beyond this, because summaries inherently "advertise" the summarized text (Ayers, 2008; Heard, 2016), authors—with the goal of being read—may consciously accentuate the stance of their summaries, for example, by writing abstracts which make stronger claims for the value of the research or which are more polemical. Stotesbury (2003) notes

a tendency for research article abstracts, especially in the humanities, to be more explicitly evaluative than the texts themselves. Authors should be thoughtful and cautious about any significant difference between the stance of their summary and their text, for these differences, although they may be subtle, are highly consequential. When we summarize another author's work, there is an ethical imperative to be fair-minded and scrupulous, especially because the reader is apt not to examine the summarized text or have it immediately available for examination.

STYLE

Style refers to a wide range of linguistic techniques, especially those at the word and sentence level, and includes both techniques that directly affect ease of reading and those that help establish stance. Style has previously been discussed as a means of reduction and in regard to the distinction between informative vs. descriptive phrasing. In this discussion, we are concerned with stylistic differences between summary and text, and my focus is before-the-body summaries.

A great many documents intended for the workplace do not have a conspicuous writing style, and workplace authors often have no reason to employ a special writing style when writing the summary. If there is a difference, it is apt to stem largely from the pressure of reduction (Holtz, 2009).

In some instances, however, authors intend a different style. Non-specialist synopses may employ techniques that add to word count but result in a more readable and "livelier" style than does the text (Breeze, 2016). Promotional abstracts employ a lively, informal style and often include a range of devices (pronouns referring to the reader, rhetorical questions, and references to shared knowledge) designed to promote engagement (Hyland, 2005).

When the text has a conspicuous style—for example, the more complex syntax and Classical rhetorical elements we often find in 19th century texts—there is no need for the summary to mimic that style. Note, however, that my brief summary of Abraham Lincoln's "Gettysburg Address" includes a syntactical construction ("Only by . . . "), which, at the cost of a few extra words, retains just a bit of Lincoln's intensity and lofty eloquence.

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FORMAT

As noted, one key role of format is to visually bound summaries from the text. But there are significant format options within a bounded summary. The structured abstract—an abstract with headings—is an effective and highly prevalent format option (Dupuy et al., 2003; Hartley, 2004). Structured abstracts may be mapped or (as in this journal) unmapped. Summaries can also include bulleted lists, and summaries—especially non-specialist synopses and other kinds of supplementary summaries—may consist entirely of bulleted lists (as does this journal's "Practitioner's Takeaway"). Another format option is to follow the longstanding convention—arguably dysfunctional—of limiting research article abstracts to a single paragraph when paragraph breaks might otherwise be expected.

Although unbounded summaries, by definition, have no special formatting to distinguish them from the surrounding text, they may have their own internal formatting, such as division into bulleted lists or boldfacing of key terms. Furthermore, it is possible that writers might take the unusual step of bounding summary content that appears within the body of a text. The summarizing portion of a document's conclusion might be boxed. Also, looking back to the (imagined) book chapter explaining Joseph Browne's beliefs regarding infectious diseases, we can imagine the author distinctively formatting the embedded summary of Browne's *Practical Treatise on the Plague.*

In some cases, format decisions have stylistic implications. Swales and Feak (2009, p. 12) note that structured abstracts and, presumably, summaries with bulleted lists contain more sentences that introduce new topics. The notion of format can be extended to digital behaviors such as hyperlinking and pop-up windows that make possible entirely new kinds of summaries.

DEMONSTRATING THE SCHEME AS HEURISTIC

We can plausibly demonstrate how this scheme, used as a design heuristic, can benefit both less sophisticated and highly sophisticated writers, and how it can benefit publications managers, content strategists, editors, designers, and writing instructors:

- An early-career computer consultant is submitting a report to his client and is writing an abstract that must conform to the client's publication guidelines. The report is built around five technical problems the consultant has uncovered. Because the abstract is limited to 250 words, he has contextualized the report in the first 50 words of the abstract and now has described each of the five problems in a sentence or two (about 30 words). But he has 50 words left over. What to do with the 50 words? There is nothing helpful in the client's guidelines. The consultant's instinct is to describe each of the problems at the same level of detail, and so he is considering making the abstract 50 words shorter than the guidelines allow for. However, recalling the Proportion descriptor, he is willing to depart from accurate proportion, and he uses his remaining 50 words to write lengthier explanations of two of the problems, the two that will benefit significantly from further elaboration.
- A researcher who is following author guidelines that call for the mapping of summaries recalls that "smoothing out" the organizational complexities of the summarized text is often necessary. The researcher, therefore, decides that the guidelines allow for some leeway in this regard.
- Another researcher, reviewing the entire scheme, stops at the Stance descriptor to perform a quick check to ensure that she has not inadvertently accentuated the stance.
- A publications manager, writing the summary section of the organization's style guide, includes the guideline that authors should raise the threshold for "importance" so as to include fewer ideas rather than pack in a larger number of sketchily explained ideas.
- Entrepreneurs planning a new company that will publish digital books are looking for innovations that will give them a competitive advantage. After perusing this scheme for ideas, they are considering a design that includes multiple within-text summaries consisting of numbered summary items. When the reader selects a summary item, the first word of the corresponding portion of the text is highlighted so that readers can easily locate that part of the text. The entrepreneurs are debating whether to employ informative phrasing, descriptive phrasing, or a combination for the summaries.

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- A writing instructor decides to use the heuristic as the basis of both a general discussion of summaries and classroom activities. As an activity, the instructor asks students to write a 500-word summary that attempts to be a microcosm of the summarized text (or else provides such a microcosmic summary). Then, she asks the students to successively reduce word count while taking note of how the summary changes—other than in length—at each level of reduction. Alternatively, she can provide a summary and text and ask students to experiment with different placements, change a summary's mapping, or make other changes prompted by an examination of the descriptors.

CONCLUSION

Summaries take many forms, serve numerous purposes, and often present significant challenges to writers, editors, and publications managers. The scheme of twelve descriptors presented here advances our understanding of summaries and summarization and, serving as a design heuristic, can directly assist in the better design and writing of summaries. As a basis for further research, it could, for example, be used to formulate research studies on the effectiveness of various forms of summarization in specific rhetorical settings. Such studies might determine how readers respond to summaries written at different levels of reduction, or with different structures, or in different formats. Or, from the standpoint of the design and writing process, studies might examine how a change in one of the descriptors prompts writers to make other changes.

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The Rhetoric of Kamikaze Manuals

By Naoko Ozaki, Jillian Hill, and Mike Duncan

ABSTRACT

Purpose: We rhetorically explore the phenomenon of kamikaze attacks from a technical communication and rhetorical perspective by analyzing two 1945 Japanese military manuals, directed, respectively, to officers and pilots on how to organize and conduct suicide attacks against American warships.

Method: We examine Japanese military ideology at a particular stage in the war to contextualize a rhetorical analysis of the two translated texts. We explore rhetorical dynamics implicit within the text, the texts as part of the instructional genre, and ethical concerns particular to the context of the texts and desired actions they describe.

Results: We explore different complementary and dynamic rhetorical aspects of the texts, such as their approach to their respective audiences, the recurring subjects of remorse and questioning orders, the normalization of the suicidal act, the need for mental toughness in the pilots, the recurring use of the imperative mood, and the dehumanizing role of images. We conclude that certain pilot mortality affects the instructional form, the language reinforces the inevitability of the suicidal act, the images included dehumanize the act further, and the manuals seem created to address potential disciplinary issues.

Conclusion: Through the genre of procedure, the two manuals help legitimize and normalize an invariably suicidal act. The two manuals are gripping case studies for discussion of ethical technical communication across cultures, in situational context, and as instructional genre, illustrating the power of written procedure to facilitate extreme acts. We suggest further studies in military technical communication, emphasizing cultural differences between different militaries.

Keywords: manuals, ethics, rhetorical analysis, military documentation, World War II

Practitioner's Takeaway:

- These two Japanese military manuals, written to facilitate suicide attacks in wartime, serve as exemplar case studies of ethical extremes in technical communication.
- These manuals are excellent examples of how powerful the genre of procedure can be to normalize and rationalize even the most extreme tasks.
- The pedagogy of manual writing can be enhanced by the use of such gripping examples, especially cross-culturally.
- Further research into military documentation, especially those not yet translated into English, from the perspective of technical communication and rhetoric would be fruitful.

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INTRODUCTION

The manual genre in technical communication aims to help readers accomplish a task that they either could not do alone or could do more efficiently with assistance from the text. But what if the task at hand is to successfully kill yourself as well as others?

Early to middle 1945 saw Imperial Japan in near-complete disarray, both militarily and economically. With its navy, air force, and merchant fleets shattered, mainland Japan was on the verge of an American ground invasion that, according to widespread American propaganda, could come at any time. With Japan's bushido code of no surrender for its soldiers (and civilians), coupled with American determination to end the war, an American invasion of Japan likely would have meant millions of deaths, given the determination by which the Japanese had defended small volcanic islands like Iwo Jima in February and March of 1945. Japanese commanders did not know the atomic bomb that would destroy Hiroshima and Nagasaki was coming, so they were facing, in their minds, a near-certain conventional invasion.

In this desperate context appeared the *Togo*, an abbreviation rendered roughly "special attack squadron" (*Togo* is principally used in existing literature but may be transliterated as *Togô* or *Togoo*), which consisted of organized and officially sanctioned groups of desperate pilots willing to fly their fuel- and explosives-laden planes directly into American naval vessels in order to damage or destroy them and, thus, to forestall the invasion and national defeat. In the West and in certain Japanese contexts, these pilots are typically called *kamikaze*, loosely translated as "divine wind."

In this article, we explore the phenomenon of kamikaze attacks in 1945 through a rhetorical analysis of a technical text that we translated for the first time into English: a Japanese military manual directed to *Togo* officers on how to organize and conduct suicide attacks against American warships. This manual (later referred to as Manual 1) is 22 pages long and contains several distinctive images reproduced in this article. We have not yet examined the original, but we have a high-quality scan courtesy of the Chiran Peace Museum for Kamikaze Pilots in Japan, where the original is located. We also examine excerpts from another 1945 *Togo* manual (later referred to as Manual 2), 88 pages long, which is available only in English translation through

the 2002 book *Kamikaze: Japan's Suicide Gods*. We have leads on other such manuals in existence, but these two examples suffice to demonstrate the genre and open the door to further exploration.

Technical instructions typically promote agency in the user by affording the opportunity to complete a task. As technical communication professors, we first became interested in analyzing these manuals as particularly extreme examples of the genre that test the boundaries of what can be considered technical instruction. Through our rhetorical analysis of these documents and their unique context, we show that they, through procedure, reinforce the decision to become "living missiles" as a rational choice. It is always difficult to match documents to effect, but the relative "success" of the *Togo* squadrons suggests they played some persuasive role in ensuring discipline among pilots that were internally struggling with their impending deaths.

We begin by providing some historical context as well as a discussion of Japanese military ideology in the last stage of the war; second, we describe relevant literature and our method of approach; third, we discuss our findings from our rhetorical analysis of the two manuals; and fourth, we note the special ethical concerns that the texts raise, before making some final conclusions.

HISTORICAL CONTEXT AND IDEOLOGY

As mentioned before, 1945 saw the Japanese military in severe distress. American forces were about to land on Okinawa, which was adjacent to the Japanese home islands, and few Japanese naval vessels remained to oppose them. While there were still thousands of Japanese warplanes left, since the disastrous Battle of Midway in 1942, there had been a severe shortage of skilled pilots that was now crippling the war effort. This made even conventional air attacks near suicidal, as they largely had to be made by inexperienced pilots in decrepit aircraft against increasingly plentiful and better-armored American planes. At least 250 carrier pilots, a "year's graduating class," were lost at Midway alone (Horne, 2012).

It is unclear who launched the first kamikaze attack, but they seem to originate spontaneously in mid-late 1944. Suicide attacks were made by pilots of other nations, such as the Germans (Feifer, 2012), but they were not organized. The first "official" *Togo* unit was

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formed in October of 1944 by Vice Admiral Takijiro Onishi (Correll, 2015) during the second battle of Leyte Gulf, but the bulk of organized, sanctioned kamikaze attacks occurred during the Battle of Okinawa in April–June 1945, when nearly 1,500 planes and pilots (the vast majority of whom were inexperienced) were used to sink approximately 24 American ships (Baer, 1996). In the battle for the Philippines, approximately 500 pilots were lost in suicide attacks (Correll, 2015). Overall, during the war, Japanese pilots flew over 2,500 suicide sorties (missions with multiple planes and pilots, and not counting escorts or observers), sinking 33 American ships, killing 4,900 American sailors and wounding 4,800, with about 4,000 Japanese pilots lost (Correll, 2015).

The Japanese navy and army were issued a pocket-sized "Instructions for the Battlefield," or *Senjinkun*, published in January 1941, which portrayed surrender or capture as strictly forbidden and dishonorable (Correll, 2015). Copies of this directive were even distributed to the Japanese civilian population by 1945. The entire country, in effect, was operating under this code by that time—a code punishable by execution and implied consequences for the family of the disobeyer. Also, in February 1944, General Hideki Tojo, prime minister and head of the military, issued an "emergency declaration," where he essentially stated that all of Japan had to be prepared to die, using the phrase *ichioku gyokusai,* "100 million shattering like a jewel" (Sato, 2017).

These directives are perhaps stark by Western standards, but they have a history and grounding in a moral code. They stem directly from *bushido*, the samurai (the historical warrior caste of Japan) way of life, which espouses personal qualities like loyalty, skill in martial arts, frugality, and honor. A key aspect to bushido is the act of *seppuku,* where a dishonored samurai voluntarily commits suicide if sufficiently dishonored or wounded, or is ordered to do so by a superior. The Japanese army and navy in WWII, through the *Senjinkun* and propaganda, were quick to link the sense of duty in *bushido* to the war effort. Historically speaking, bushido was a code for samurai, but, in WWII, this was extended to the common soldier, sailor, or pilot, who now saw capture or surrender as unthinkable. It is difficult to draw a close link between *seppuku* and *Togo* suicide attacks, but they do have in common the concept of a suicidal act

that grants or restores honor to the subject, family, or country. This mindset was not limited to *Togo* pilots; the mass suicides of both Japanese soldiers and civilians during the invasion of Okinawa paralleled the intense kamikaze attacks of the war off the coast (Shimpo et al., 2014, p. 3).

It is safe to say, then, that the Japanese cultural mindset in 1945 was favorably inclined toward desperate military attacks that would have been unthinkable even a few years before, in early 1942, when the war was going in Japan's favor. Steady American successes, starting with the Battle of Midway in 1942, drained morale to the point that the kamikaze attack emerged as a reasonable alternative to conventional aerial warfare of the time, where the two main kinds of naval conventional bombers, dive bombers and torpedo planes, were used to attack ships. The pilots of these more conventional aircraft at least had a chance of returning to a carrier or airfield; the only chance for a *Togo* pilot to return was if he failed to locate a target. Contrary to popular legend, Japanese conventional pilots during the war were indeed issued parachutes, but most refused to wear them as they did not want to be captured and they got in the way of flying (Caidin & Saito, 1957).

The typical *Togo* pilot was from the "upper ranks of university students in intelligence, sensitivity, and culture" and most were volunteers. Those willing to serve were twice as numerous as the available planes (Feifer, 2012, p.156). Their typically artful parting letters are well known, such as in this excerpt:

> The Japanese way of life is indeed beautiful and I'm proud of it, as I'm proud of Japanese history and mythology, which reflect the purity of our ancestors . . . And the living embodiment of all wonderful things from our past is the Imperial Family, which is also the crystallization of the splendor and beauty of Japan and its people. It is an honor to be able to give my life in defense of these beautiful and lofty things (Feifer, 2012, p. 157).

It is important to reiterate here, especially in a 21st century age of peacetime terrorism, that the *Togo* attacks were expressly directed toward military targets. Loose comparisons could be made between the *Togo* pilots and the September 11, 2001 hijackers, who apparently had a highly religious "Last Night" document with detailed

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instructions (New York Times). However, the *Togo* pilots, immersed in bushido culture and wishing to defend their homeland from direct, devastating military attack (or, hopefully, to force the US to sue for peace), operated well within the expectations of wartime behavior by attacking warships and other military targets. Their attacks were unorthodox, but the equal of suicidal attacks has happened in wars throughout history. What made the *Togo* pilots unique is their highly organized, even mechanistic operation, enabled by the language and structure of their manuals.

METHODOLOGY

Because Manual 1 is written in an older dialect of Japanese, it was necessary to first translate the text from older Japanese to modern Japanese, and then to English. This complex task was chiefly undertaken by one of the authors who is a native Japanese speaker; her credentials also include a Ph.D. in literacy, culture, and language education and experience teaching multiple levels of Japanese.

We then rhetorically analyzed the text in a similar manner to how a wide variety of technical communication texts in the literature have been treated, such as engineering documents (Ding, 2001), 16th century commercial reports (Moran, 2002), corporate privacy policy statements (Markel, 2005), scientific papers (Reeves, 2005), and CEO letters (Conaway, 2010), among others. We placed a special emphasis when collaborating on what rhetorician Michael Leff has called "the effort to interpret the intentional dynamics of a text" ("Things," 1992, p. 223) with the goal of producing "an account of the rhetorical dynamics implicit within it [the text]" ("Legacy," 1986, p. 378). In other words, we wanted to learn how the authors of these manuals intended for them to function rhetorically, by our describing how the various argumentative elements present in the text worked together to achieve the author's intentions—the implicit "rhetorical dynamics." Our initial examination of Manual 1 suggested that its paragraph-centric structure had an additive or cumulative rhetorical effect on the reader that could best be explained by such a holistic view.

The usefulness of prior examinations of instructional materials in the literature to our analysis

is limited. There has been extensive exploration of motivational content (Loorbach et al., 2013; Loorbach et al., 2007; Loorbach et al., 2006); as well as instructional design, namely system states, streamlined-step and step-rich procedures (Farkas, 1999; Gellevvij & van der Meij, 2004); the use of prominent headings, multimodal qualities, and organizational strategies (Ganier, 2004); and the importance of genre (Miller, 1984), but none of this research examines any instructional tasks remotely as serious and extreme as wartime suicide attacks. However, we found Farkas's (1999) terminology particularly useful for our analysis: specifically, the four system states; *desired, prerequisite, interim,* and *unwanted*; allowed us to describe the subgoals of the authors of the manuals, and "step-rich" is a good description of both manuals as a whole in that they are "more loosely constructed" than the "streamlined-step" approach (p. 44).

Few extant studies on military technical communication seem to fit our task. The ancient and medieval military manuals that Bliese (1994) reviews, for example, are exclusively for high-level commanders in elite social classes and offer strategies for using ground troops in conventional conflicts. Other military discourse studies roughly parallel to ours suggest, curiously, that there are many important artifacts to be explored in military documents, but none of them ever reflect well on the military. Negative verdicts of military discourse include sexism in a U.S. vehicle maintenance manual (Bernhardt, 1992), communicative incompetence by a Civil War general (Loges, 1995), dangerous negligence to a nearby civilian community by a U.S. facility (Dragga & Gong, 2014), and inconsistency to the long-term detriment of soldier health in medical discourse (Lindsey, 2015).

Bernhardt's 1992 study of two versions (1970 and 1990) of an Army maintenance manual using cartoon images of women is illustrative. The artifact itself is fascinating just on its "anachronistic" visual qualities alone (p. 218), but as Bernhardt rightly notes, condemning its sexism is largely pointless, as "a rhetoric of visual attractiveness will continue to exploit gender" (p. 221). The value of Bernhardt's analysis, then, as with ours, lies in the ability to describe how the instructional rhetorical maneuvering—in Bernhardt's case, "using sex to sell" (p. 221) the need for vehicle maintenance— functions uniquely within a military context.

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RHETORICAL ANALYSIS OF MANUAL 1

Manua1 1 is 22 pages long on 5-inch x 3.5-inch paper. Its small size suggests that it could be carried folded or unfolded in a pocket to refresh one's memory or to quote from it. The paper is inexpensive and it could be easily replaced if damaged, destroyed, or lost. The table of contents (Figure 1) includes an overview, two chapters, and appendices. A total of 49 steps are articulated in Chapters 1 and 2. Manual 1 is clearly a procedural document, given it is prefaced with an overview, includes step-rich sequential directives, integrates multiple headings throughout, and features multiple images. Figure 2 is a sample excerpt taken from Chapter 1 that, upon a cursory glance, illustrates the cumbersome nature of the majority of steps included. More specifically, there are too many points listed for easy memory retrieval, and they are general in nature and not elaborated well.

The division between the two formal chapters, Attack Preparation and Attack Implementation, feels arbitrary. The real organization seems to be by paragraph, each numbered, with 49 paragraphs total. We will not reproduce all of them here, but will rather examine critical passages thematically. However, we note that the entire manual, once read through, has a noticeable additive effect. Individually, each paragraph serves as a dry instructional maxim, but taken all together, they make the act of suicide seem inevitable by providing only one path—toward death.

The author is unknown and anonymous, but, presumably, Manual 1 was written above the rank of a *Togo* commanding officer with the images possibly added by an assistant or assistants. It also appears that this manual could be used in multiple *Togo* units as its orders are not from any specific source and are applicable to several tactical situations. There is no indication that the manual was directed from a superior, suggesting that the officer who did write it may have done so at his own discretion, feeling that such a document would be useful to reinforce orders and serve as a training tool.

The intended audience is the "high-level" commander of a *Togo* squadron, who would in turn be commanding the individual pilots. As such, the manual represents an organizing force in the officer's and his pilots' lives; it governs their conduct and purpose. Pilots would not see this manual in normal

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Togo troop battle manual table of contents

Figure 1. Table of contents

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conditions, though it is quite possible some of it was used verbatim as teaching material. Given the new nature of *Togo* attacks, the manual would have been valuable for establishing these squadrons, especially if the commanders, having never commanded such a squadron before, had questions on how to proceed.

Even with this focus on the officer in command, Manual 1 still falls safely within the states model of procedural discourse described by Farkas (1999) as it often, deliberately or not, blends the pilots' roles with those of the officers. The *desired* state is the destruction of the target vessel; the *prerequisite* state is locating the target; the *interim* states are getting into position to attack; *unwanted* states include making a bad approach

that misses the target (Farkas, 1999; van der Meij & Gellevvij, 2004) or questioning the mission. If it were completely focused on officers, the manual would have concentrated more on matters of discipline; as is, the document is a blend between action and motivation.

Near the beginning, in passage 3, there is an admonition that introduces a recurring element of remorse and questioning:

(3) The true purpose of *Togo* troop is to go over and beyond life-and-death, and to exert completely the unique battle power with mentality of truly [*ikan-naku*] (completely, without remorse) and risk their own lives and excellent battle skills, and

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Number 7: Obeying the commands of the high-level commander, the commander of the attacking force considers at all times the enemy's condition, the weather, and attack force's skills, etc., and formulates a detailed, meticulous plan of attack, ensuring to protect [the troop] at the time of take-off and during flight, and needing to plan for [the troop] to arrive at the target. Considerations [the commander of the attacking force] needs to make in order for these [to realize] are mostly as follows:

1. Airport where planes departed
2. Preparation for take-off and taking-off, especially when airplanes' departure was delayed
3. Safeguard airplanes while grounded, during preparation and take-off, and in the air.
4. Distinction between the direct guard force and indirect guard force and the relationship between the two
5. Communication during the flight
6. Responses to in-flight emergencies
7. Direct guard force's actions at the start of attack and immediately after it to confirm the result of the battle
8. Communication with the reconnaissance plane
9. Organization of the attack force to fly in formation, when necessary

It is of utmost importance for the attacking force commander to thoroughly know the Togô troop commander's attack strategies.

In the case of the Togô troop commander, he also acts as the attacking force commander, and he creates an attack plan in accordance with the above.

Figure 2. Example of directive from Manual 1

to [*bakushin shoototsu*] (dash and crash) into the enemy's moving or stationed ships, invariably sink them, and then to destroy the enemy's plan so that doing so opens up the paths to success for all of the [Japanese] military. As seen here, the success of this attack stems truly in the spiritual strength of the in-air workers.

The concept of *ikan-naku* (completely, without remorse) seems odd to include if the pilots did not have any doubt; there is, then, a tacit betrayal of the possibly questionable nature of the order. This suggests, then, the possible presence of an *unwanted* state.

> (4) *Togo* troops need to, no matter what, sink the target (without questioning) of the types and sizes of the enemy's ships, ordered by the High-Level Commander.

'Without questioning,' of course, presupposes the idea of questioning, another *unwanted* state. These two words in the span of Sections 3 and 4 suggest, then, the document has some ethical seams. The manuals aim to shut down doubts not only in the officer's mind but in his subordinate pilots as well. The very act of questioning gets in the way of following orders and is to be avoided. Also, the claim that a successful attack "opens up the paths to success for all of the [Japanese] military" is telling in that, taken literally, the message is that the fate of the entire Japanese military is dependent on the success of the *Togo* squadrons. They are not aiding, helping, assisting, or striking a blow—they are a necessary vanguard for any eventual victory or peace without surrender. The early placement of this claim suggests it is foundational for the overall rhetorical effect of reinforcing of the mission's inevitable conclusion—the *desired* state of death.

To further support the *desired* state, Manual 1 consistently strives to normalize its intended task of suicide attacks:

> (26) Although it varies depending on the condition, particularly the airplane types, weather conditions, etc., charging is [done] by a steep descent or extremely low-altitude flight. In either case, it is necessary to choose appropriately the point of charging and its start time of the attack

in order to get the expected result by crashing into the enemy's ship.

The "expected result by crashing into the enemy's ship" is quite distant from "killing yourself and as many American sailors as possible by flying your plane into a deliberate suicide attack." There is never any question about whether or not the attacks are unusual; they are presented as ordinary wartime maneuvers. The absence of doubt is substantial; the manual makes killing yourself for your country just another procedure. If the commander has doubts, he needs only to consult his manual. Furthermore, we suggest that, even early on, Manual 1 represents what we call, for lack of a better term, a *closed procedure.* The path to attempted suicide for the pilots in the procedure is singular and inevitable. Even if the officer disregards the manual entirely, its directives remain. One way or another, the *Togo* will commence their attacks and die. Death is the only available path; there is no other *desired* state.

Continuing to reinforce the *desired* state, the manual emphasizes *seeshin-teki yooso* (mental or emotional strength):

> (6) In order to complete the assigned tasks, *Togo* troop [members] have to possess not only *seeshin-teki yooso* (mental or emotional strength) but also eyes that can determine opportunities and skills in order to achieve goals. For this, it is necessary to seek any opportunity after arriving at a battlefield and also to be devoted in training to value, and use even one second of leisurely time (for a goal).

There is also the related *ishi o motte* (to own a clear will):

> (22) Although whether they should continue to move forward if the [*Togo* troop] encounters an enemy battle plane while moving forward depends on the commands of the high-level commander, the attack force commander is to judge the conditions of that time appropriately and do his best to avoid the start of a battle. Although the guard force and *Togo* troop often become separated if the battle begins in the air, it is necessary for the direct guard force to avoid being separated from *Togo* troop. If it is inevitable and they become separated, the *Togo* troop commander needs to quickly [*ishi o motte*] (own a clear will) and continue moving forward.

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And, finally, there is "burning determination":

> (37) At the time of the attack, it is generally the case that the conditions the *Togo* troop would encounter are extremely difficult and harsh. It is inevitable that [we] predict various types of confusion and mistakes. Even so, each airplane needs to calmly proceed with a deadly attack with a burning determination to sink the target, and to accomplish the assignment to completion.

As to why the author includes these psychological qualities, like the earlier *ikan-naku* (completely, without remorse), if one has to mention it, it may not be present. The emphasis on mental power and will is telling; we would not see this in a pilot's manual that did not assume the pilot was going to die. However, from everything about the *Togo* pilots that we have read and discerned, there does not seem to have been a practically significant morale problem among the pilots in that none are recorded to have backed out. Any defection would have led, of course, to immediate execution, and the pilots, as we will discuss later, were naturally racked with fear and doubt even as they followed orders. Still, the references to mental strength or will are a failsafe, in that the *Togo* high-level commander needed to monitor the pilots for potential lapses in willpower. It could be a way for the writer to emphasize the difficulty of what he is asking of the pilots and their commander, but, given the language in the rest of the manual, this would be an exception to the typical authoritative distance, which is chiefly created by tone.

> (7) . . . It is of utmost importance for the attacking force commander to have thorough knowledge about the *yooryoo* of the *Togo* troop commander's attack.

Yooryoo is the term used for plans and for the manual itself; it is a very serious word that means anything from outlines, key points, instructions, or a manual. Accordingly, the entire manual is in the imperative mood and the text in its original dialect is emotionless and dry; it contains no deviations from formal politeness, which contrasts its violent subject matter. There is a huge emphasis on efficiency; *Togo* attacks

must be highly organized and orders must be obeyed without question. There is no room or reason for deviance. The only discretion allowed *Togo* pilots is being able to return when they are unable to locate the target or targets:

> (23) If it is inevitable that the [*Togo* troop] returns due to conditions, especially the interference of the weather, being unable to find the target, etc., *Togo* in-air workers, without being disappointed, need to be prepared for the next attack with even a stronger *ishi* (will) . . .

Not being able to reach this *prerequisite* state must have been both relieving and simultaneously frustrating for the pilots. After having prepared themselves to die, they fail to find their target, reaching an *unwanted* state, and instead return to base. Fortunately, the manual provides the solution, which is an order not to be disappointed and to prepare for the next attack. What seems to be an escape from duty becomes, again, the single path, which, according to the next directive, must be followed right up to the instant of death:

> (32) As for immediately before the crash, as pressing the elevator(s) (down) completely by increasing the speed, it is important not to lose the sight of the target by closing the eyes for a split second.

While this is a high-level (for officers) manual, there are some vivid instructions for pilots such as this one. This advice is repeated in Manual 2, and the doubling suggests the advice was common. Given the approach speeds of the planes being over a hundred knots, it is good advice for increasing the chance of hitting the target. It is also, in our opinion, chilling. Even just before impact, the pilots cannot even close their eyes; total commitment is necessary throughout the entire doomed flight.

Additionally, there is a great deal of material and thought put into what kind of approach the plane should take, which depends on the situation. A sampling follows:

> (30) In the case of surprise attack, a very low altitude horizontal attack is to be [made] when the height of clouds is low, at night, at dawn, at dusk,

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or when using airplane types such as "airplane 67" or "airplane 45," etc., and in responding to the conditions at the time, [the troop] is to do a dive or a horizontal crash.

(31) Although the point of crash varies depending on the airplane types, target types, size, speed, etc., [the target] should be the center of the deck in the case of a steep dive crash. If possible, it is best if it is around the area between the chimney[s] and the bridge, or the elevator if it is an aircraft carrier, and the area slightly above the waterline in the center is good in the case of a very low altitude horizontal crash.

These two approaches, the dive and the horizontal, mimic the two common naval bombing techniques at the time: the dive bomber and the torpedo bomber. A dive bomber would approach from a high altitude and dive at a steep angle toward the target, increasing speed and accuracy dramatically before dropping its bombs at the more thinly armored top of the target ship (Smith, 1982). Pulling out of the dive left the bomber vulnerable to attack as monoplanes of the era were slow climbers, but with the *Togo*, there was no concern for escape. A torpedo bomber, on the other hand, flew low and slow toward the target ship, usually in large groups to maximum success, and dropped a torpedo into the water that would then accelerate toward the ship, often from a 45-degree angle, and explode near the waterline of the target's hull.

It made sense to Japanese commanders to adapt these two already tested techniques to kamikaze warfare, particularly the simultaneous use of multiple aircraft. According to the text, *Togo* attacks were organized into groups of up to 10 planes, including a lead plane with a more experienced pilot who located targets, the *Togo* planes themselves, and escort planes that protected the attacking *Togo* pilots from American air-to-air fighters. This structure seems not only intended to overwhelm American air defenses, but also to maintain morale and discipline. If a *Togo* pilot saw a squadmate's plane make its final dive, he was more likely to do likewise. In this way, the manual emphasizes that the pilot is not alone when he makes his final approach; it is a team effort. However, at least according to paragraph 36, only one plane was to attack each target, so it is possible that a

given *Togo* pilot would not be able to glance at an ally's plane for reassurance before the final approach.

While the language of the manual is compelling, the images are perhaps the most striking component of Manual 1. There are four images within Manual 1, which we will refer to as "Dive," "Formations," "Attack Assignments," and "Dive II," labeled as images 3, 4, 5, and 6, respectively. Each, along with the imperative text, contributes to an abstracted, clinical perspective that dehumanizes and renders abstract the horrific act of these pilots' suicides.
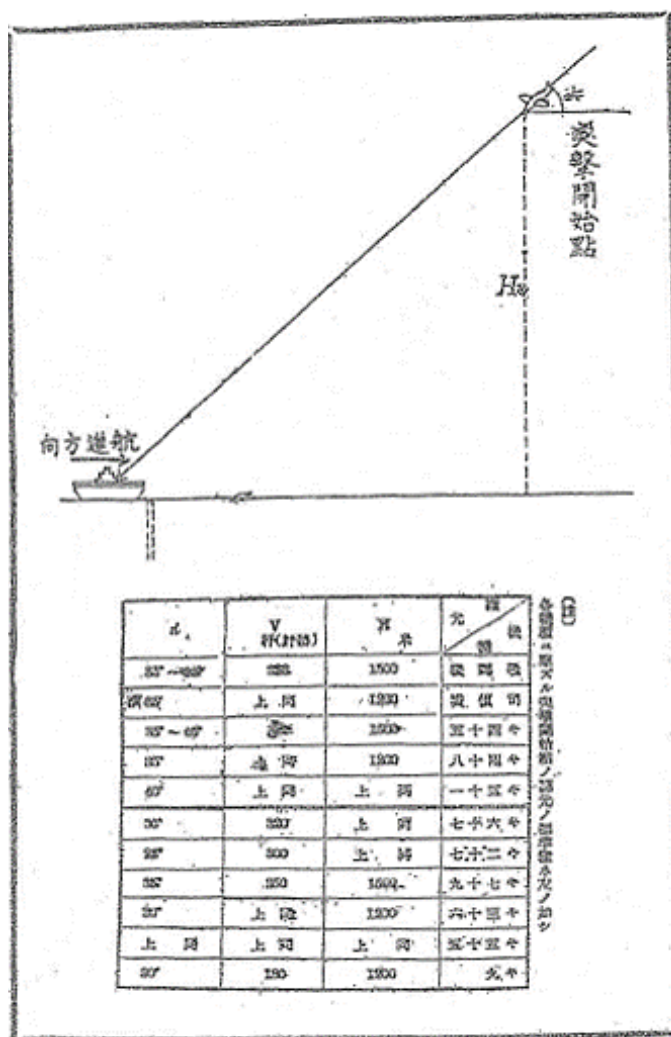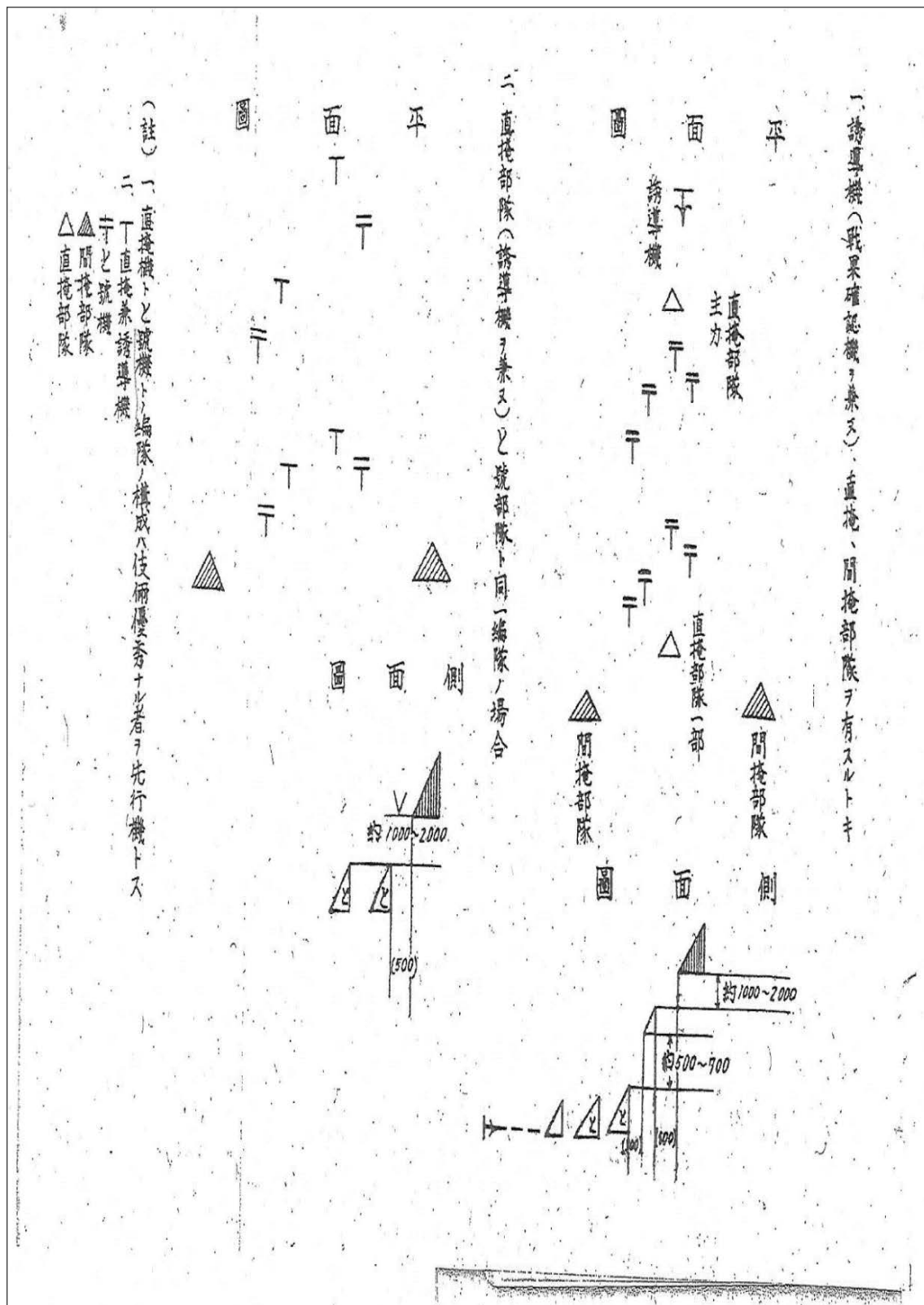

Figure 3. Dive
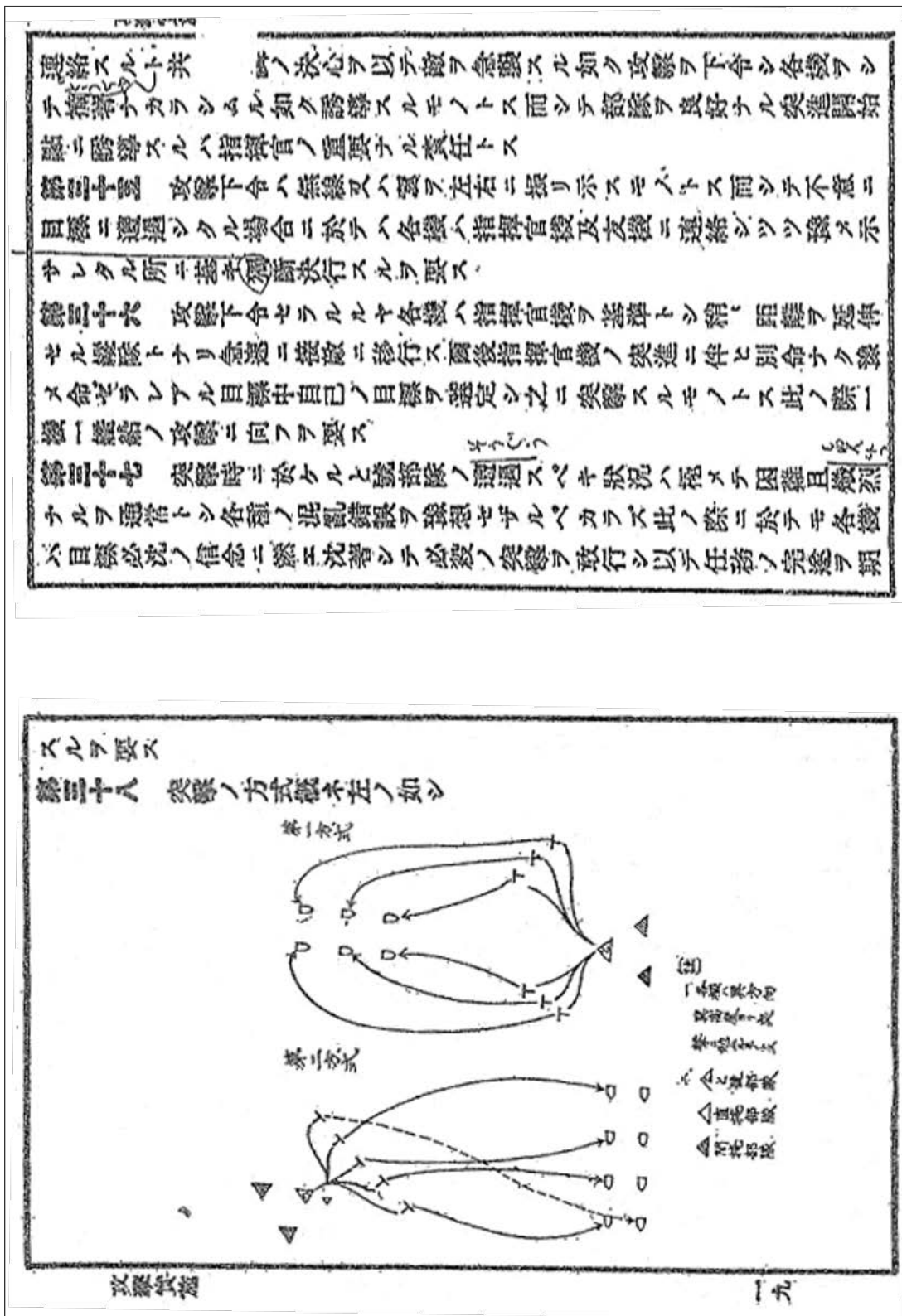
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Figure 4. Formation

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Figure 5. Attack assignments

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Figure 6. Dive II

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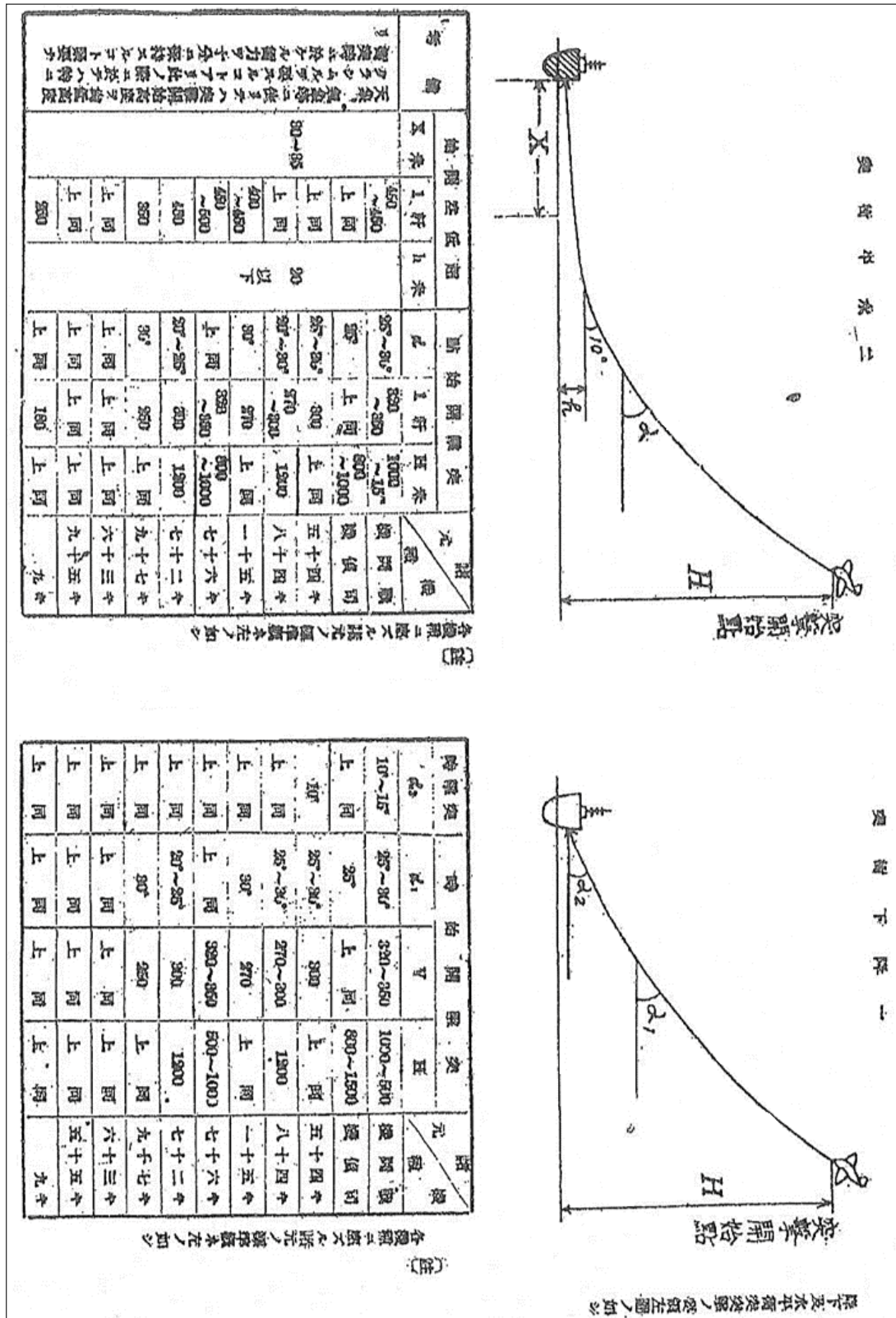
However, perhaps most notable about these images is what they do not include—any real aspect of hurtling hundreds of miles an hour in a plane toward a collision with a huge, near-stationary steel target that is actively shooting back, or the sudden explosion in a giant ball of fire and debris. Instead, as in "Dive," the reader sees a simple triangle, with the hypotenuse being the path of the plane. The plane is nearly the same size as the target, not even an attempt at scale. This visual depiction creates an abstract fantasy world. All the pilot must do is look up what kind of plane he will be flying and memorize the correct airspeed, altitude, and attack angle (through the accompanying table). A fiery, violent suicide is reduced to an easy-to-solve trigonometry problem. There are only numbers and angles. This basic outline is repeated in "Dive II," which offers shallower and deeper approaches, respectively, described further in Sections 26–30.

The other two images, "Attack Assignments" and "Formations," are no less dehumanizing and simplifying. "Attack Assignments" renders, again, the planes and the ships as the same size, and draws a mere connecting line between plane and ship to represent the desired approach. The same goes for "Formations"— there is no humanistic content, only triangles and lines. We suspect these simple images were copied to chalkboards for use in pilot instruction and their abstract nature kept discussion at the level of technique.

Best practice in image placement suggests that images are most effective when integrated in close proximity to the directive they illustrate. However, all of the images included in Manual 1 appear as appendices, which could have made referencing them in juxtaposition with directives cumbersome. We suspect that the images were added at a later time, perhaps because the directives by themselves are hard to mentally picture.

CONCLUSIONS ABOUT MANUAL 1

Based on these observations, we would make four global arguments about Manual 1. First, this manual was written for commanding those who are certain to die in action, as opposed to a more conventional military manual written for those with at least a chance of surviving enemy action. This vastly different sense of pilot mortality affects the form of the instructions, in that typical safety information, basic defensive

measures, or maintenance procedures are not considered; the manual's nature is entirely offensive and single-pathed toward the *desired* state.

Second, for the *Togo* pilots, immersed in a bushido-driven culture, hearing about their friends dying in action (making it difficult to excuse not risking their lives as well), living under the Japanese Field Service Code that forbade surrender or capture, and faced with an imminent ground invasion of Japan's home islands (reinforced strongly by American propaganda), the most rational and really the only choice was to become a living missile. Thus, these manuals reinforced their justification of desperate yet reasonable and rational action. This is not to say that we, the authors, think their actions were reasonable and rational, but rather, the pilots and commanders thought so, and manuals like this one provided an inevitable procedure to fall back upon in moments of doubt.

Third, the images in Manual 1 dehumanize and render abstract the horrific act of these *Togo* pilots' suicides, portraying them as a mechanical, mathematical exercise. Suicide is rendered as trigonometry. The math is necessary, but the chasm between the images and the humans obliterated in an instant is wide. There is a brief glimpse of possible empathy in passage 3, as noted before, but it seems to be a slip of an otherwise authoritative mask.

Fourth, Manual 1 serves as an excellent example of authoritarian professional discourse that was apparently effective to some degree, in the sense there are no documented instances of *Togo* pilots defying their orders. Some may have flown but deliberately missed their targets, perhaps, but the existent diaries and letters cannot testify to the final flights. We cannot connect the manual directly to the effectiveness of *Togo* unit discipline, but the existence of the manual and its arguments suggest that discipline was a concern.

ANALYSIS OF MANUAL 2–'BASIC INSTRUCTIONS FOR TO-GO FLYERS'

In 2002, Albert Axell and Hideaki Kase published translated-into-English excerpts from an 88-page manual dated May 1945, "compiled by the Shimoshizu Air Unit in Chiba Prefecture, near Tokyo" (p. 27). Unlike Manual 1, directed to a commander, Manual 2 is intended for the actual pilots. Its very late date after the battle for Okinawa suggests, like Manual 1, that

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it is intended for attacks in the event of an American invasion of the Japanese home islands.

Our remarks on Manual 2 cannot be as extensive as for Manual 1, as we have been so far unable to locate the Japanese text of Manual 2. As such, the larger organizational strategy, or any graphics, are unavailable. However, we can make several important observations, given that the translated excerpts provided by Axell and Kase are indeed representative of the manual as a whole, and we also have Manual 1 for comparison.

The main focus of Manual 2, based on the translated excerpts, is threefold: 1) mental and spiritual preparation, 2) technical instruction, and 3) vivid and lurid description of the suicidal act. We have reproduced them here as they are presented in Axell and Kase's manuscript.

Pilot preparation shares an emphasis on mental and spiritual preparation with Manual 1:

(PAGE 3)

The Mission of To-Go Units

Transcend life and death. When you eliminate all thoughts about life and death, you will be able to totally disregard your earthly life. This will also enable you to concentrate your attention on eradicating the enemy with unwavering determination, meanwhile reinforcing your excellence in flight skills.

Exert the best in yourself.

Strike an enemy vessel that is either moored or at sea.

Sink the enemy and thus pave the road for our people's victory. (p. 78)

The repeated short imperative statements here, like in Manual 1, are effectively maxims, a terse declaration of essential wisdom and action. They are easy to remember if studied individually and demonstrate well the manual's assumption of authority. Indeed, much like religious discourse, the primary rhetorical appeal for both manuals is an appeal to authority, as we might expect from any military manual. However, in this desperate context, that same appeal becomes much more morbid in Manual 2 than the style of Manual 1.

The technical instructions are helpful, though, like Manual 1, they are a bit vague, trying to hit a middle or moderate approach to figuring out the dive.

(PAGE 33)

Dive Attack

This varies depending on the type of aircraft.

If you are approaching the enemy from a height of 6,000 metres, adjust your speed twice; or from a lower height of 4,000 metres, adjust speed once.

When you begin your dive, you must harmonize the height at which you commence the final attack with your speed.

Beware of over-speeding and a too-steep angle of dive that will make the controls harder to respond to your touch.

But an angle of dive that is too small will result in reduced speed and not enough impact on crashing.

Here, there is much more detail than Manual 1, which was directed at officers—solid practical advice, though no less chilling, especially given it is possible that many of the rookie pilots rushed into service in 1945 had never attempted a high-speed dive from comparatively low altitude as described here, until they went on their suicide mission. As such, Manual 2 seems aware of the need to bridge across an *interim* state of confidence.

The moment of impact and death is described in imaginative, lurid detail. After being told to keep one's eyes open during the last moments of the attack, there is a moment of sublimity:

(PAGE 39)

You are now 30 Metres from the Target

You will sense that your speed has suddenly and abruptly increased. You feel that the speed has increased by a few thousand-fold. It is like a long shot in a movie suddenly turning into a close-up and the scene expands in your face.

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The Moment of the Crash

You are two or three metres from the target. You can see clearly the muzzles of the enemy's guns.

You feel that you are suddenly floating in the air. At that moment, you see your mother's face. She is not smiling or crying. It is her usual face. (p. 81)

Unlike Manual 1, the excerpts border on the poetic:

(PAGE 43)

. . . Remember when diving into the enemy to shout at the top of your lungs: "Hissatsu!"

[Sink without fail!].

At that moment, all the cherry blossoms at Yasukuni Shrine in Tokyo will smile brightly at you. (p. 82)

These three modes of communication; the mental/ spiritual, the technical, and the vivid; blend together here to create compelling content. In particular, Manual 2's author has correctly surmised that the Togo pilots would be very curious as to what would happen at the moment of their deaths and has accordingly surrounded this moment with images of comfort, detachment, and otherworldly surrealism. This emotional overlay serves to cushion doubts the pilots might have—the implication is that there will be no pain, only a closing moment of sublimity. As such, we feel comfortable labeling the mission of Manual 2 as offering not only the logical reassurance and reinforcement offered by Manual 1, but emotional reassurance as well, in order to reach the final *desired* state.

The major similarity between the two manuals, though, is their authoritarian, imperative tone. They are to be followed as closely as possible. There is no improvising or mental meandering to be done during a suicide attack, save rote airspeed and altitude correction. The pilot is to head directly for the target and kill himself and others with the maximum amount of efficiency. Realistically, in such a stressful moment, few pilots followed all these instructions to the letter; however, the manual's presence in training would increase the chances of some directives being

remembered and followed and thus increase the chances of a "successful" attack.

ETHICAL QUESTIONS

The instructions in these two manuals present an extreme example for ethics; namely, is killing yourself and others ethical? Or, more pressing for technical communicators, is writing such a manual at all ethical? When the Society of Technical Communication defined the role of technical communicator for the U.S. Department of Labor in 2012, it stated that practitioners "produce instruction manuals and other supporting documents" (Henning & Bemer, 2016, p. 313); given this centrality of the manual genre, we feel obligated to venture beyond the rhetorical analysis into ethics.

Katz's (1992) analysis of a 1942 German technical memo that detailed how best to redesign trucks used for gassing Jews and "undesirables" to be more efficient is a good reference point. Katz concluded critically that the German memo was not only highly effective from the standards of modern technical communication, but it operated like much later modern technical communication through an "ethics of expediency" where the means justify the ends and the ends are never in question (p. 257). These two *Togo* manuals inhabit that same efficiency ethic, but while gassing innocent civilians to death is obviously wrong (though not to the author of that memo!), wartime actions against enemy soldiers is generally not. In a similar vein, Miller (1989) argues that professional communication is "a matter of arguing toward the good of the community rather of constructing texts," but for the good of which community (p. 23)?

Past explorations of technical communication ethics include the desirability of humanistic visuals, especially when describing human tragedy (Dragga & Voss, 2001; Dragga & Voss, 2003) as well as, increasingly, sensitivity to the circumstances of intercultural technical communication (Flammia & Voss, 2007) and its teaching (Aguad & Voss, 2017). Central to these analyses is a charge for technical communicators to accept "the moral responsibility to bring humanity to the verbal and visual display of information" (Dragga & Voss, 2003, pp. 78–79).

We agree with this charge but caution that the historical, cultural, and wartime contexts of these two

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manuals renders retroactively judging them by such an ethical standard problematic. The threat of invasion was real and the military situation desperate. If these manuals did not fully humanize the act of suicide in battle, can we judge their design or message, or, more importantly, judge future uses of this kind of rhetoric if the situation seemingly calls for an impersonal approach as being the best for mission success"? If there is a rhetorical situation where dehumanizing rhetoric is acceptable, ethically, then these texts, we suggest, are an intriguing place to start looking for it.

The discipline in the Japanese military of the time, and in previous decades, even going back to the cultural precedents of the Edo period, was notoriously brutal. Conscientious objectors did not exist. Soldiers disobeying an order could be executed summarily, and their entire families could suffer consequences as well; this discipline was just as harsh in the *Togo* squadrons, where officers sometimes capriciously sent pilots they disliked out on missions while delaying others from more prominent families (Ohnuki-Tierney, 2006, p. 11). The prevailing fatalistic reasoning thus became that completing the mission was preferable to disobedience or the increasing likelihood of being killed by an American bombing. Patriotism, high at the beginning of training, dwindled (p. 6), and as one doomed pilot wrote in his diary three months before his final mission, "To be honest, I cannot say that the wish to die for the emperor is genuine, coming from my heart. However, it is decided for me that I die for the emperor" (p. 11). The manuals, then, are reinforcement of a fate already set and form a last-minute rhetoric of control and discipline.

Manning and Amare note in their treatment of technical communication ethics that "If we define all of ethics, as Peirce does, as the reasoned choice of actions to attain reasonably chosen goals, then this . . . is an ethical choice, to weigh visual strategies against rhetorical goals" (2006, p. 210). Were the goals reasonable in this case? Japan faced an unimaginable defeat at the hands of the US, when it was widely believed by Japanese that the US tortured their prisoners to death, whether military or civilian, and that they would butcher the Japanese civilian population in an invasion. The *Togo* pilots seem to have believed, at least tentatively, that their guaranteed deaths had some

small chance of preventing this defeat from happening; therefore, the only logical and ethical thing to do with a life already marked for death was to commit themselves and their planes to those deaths to avert national defeat.

The normalizing power of writing-from-a-distance in these manuals cannot be underestimated. It is one thing to be asked, as part of one's duty, to kill yourself via direct personal order; it is another to be ordered to do so through, or with assistance from, the medium of a manual (Manual 2) or to order others to kill themselves with the aid of a manual (Manual 1). In the West, a military manual would generally assume there is at least a chance of returning alive. Indeed, many U.S. military manuals in use emphasize multiple survival techniques, but there is no such expectation here for *Togo* pilots, save in circumstances when the target ship or ships cannot be found, in which case the pilot was expected to return, and fly and die another day.

The typical *Togo* pilot was young, well educated, inexperienced at piloting, and outwardly motivated. We can also surmise that this typical *Togo* pilot was also, by having these four qualities, susceptible to the authoritarian discourse in these manuals. Therefore, the chief agency of these attacks is not in the hands of the individual pilots but their commanders and the authors of these manuals. Without specific orders to do so, and the military structure to enable the act, we suspect kamikaze attacks would have still occurred but would have been far rarer and disorganized. A conscious decision, therefore, at some high level was made to operationalize the *Togo*, and that is principally where the blame, if there is any to assign, lies.

Together, these two manuals offer an important ethics lesson for 21st century manual writers. Images and encouraging language can be helpful, certainly, but they also ethically enable. We suggest that manual writers today should be cognizant of precisely what they are making possible, and remember that what they view now as inevitable or necessary may be illusory or optional; indeed, the hypothetical and, from all sources at the time, certain ground invasion that drove the writing and consumption of these manuals never happened, due to Japan's surrender in August 1945 after the American atomic bombing of Hiroshima and Nagasaki.

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CONCLUSIONS

(49) Although it is the responsibility of the guiding plane to confirm the result of the battle of *Togo* troop, depending on the conditions of the battle, weather, degrees of brightness or darkness, etc. it is often difficult to confirm the battle result. For this reason, the indirect guard force and the direct guard force need to exert [effort in] confirming the battle result as much as they can.

This, the last paragraph of the total 49, is emblematic of Manual 1 as a whole. It offers an exhortation to willpower and action while simultaneously not offering much detail, chiefly as one cannot practice a *Togo* mission like other airplane maneuvers. This is where Manual 2 comes in with its dual mental/spiritual advice, deviating from mechanistic technique to offer emotional comfort. We surmise that *Togo* squadrons had some version of both Manual 1 and Manual 2, then, to reinforce this dual argumentative strategy. We regret that we cannot make any definitive claims about usability, but again, the lack of documented refusals suggests usability issues did not negatively affect the overall mission of the *Togo.*

It is our hope that this rhetorical analysis sheds light on the phenomenon of the *Togo* attacks and opens up future fruitful analysis of other military manuals and discourse, particularly those from World War II. We feel it is important to subject wartime documents to rhetorical analysis so that their rhetorical maneuvers are left transparent to history, and especially for the benefit of those who may write such military discourse in the future. In these two cases, the manuals exhibit clear rhetorical strategies toward engaging their audiences: the young, inexperienced, and bushido-motivated *Togo* pilots, and their officers, charged with nothing less than successfully killing both the enemy and their own personnel. These are not objective instructions but rhetorical acts, and the extreme nature of the intended desired state make them excellent examples of such acts for pedagogy when demonstrating the wide range of the manual genre for students and instructors.

On the question of visuals, Dragga and Voss (2001) advocate that technical communicators should genuinely integrate "words and pictures instead of simply juxtaposing the two on the page or screen" (p. 271). We would like to extend this further, in that students should be aware of the consequences of divorcing visuals from their context by including important images as appendices rather than integrating them within the text. Manual 1's visuals are so removed from the directives that it isolates them from the tasks they represent; the only reference to the visuals occurs in the table of contents. This distancing move may or may not have been intentional but, regardless, a dialogue about the spatial proximity of visuals and the text they supplement is an essential one in which students should participate.

Teachers of instructional writing have countless choices when it comes to providing real-world examples of genre, but few examples are as gripping, ethically problematic, and dramatic as these. The standard "introduction to technical/professional writing" class at the undergraduate level usually leans on a catch-all, genre-based textbook that has a single chapter on instructions, if that, with relatively pedestrian examples. Unusual and compelling artifacts such as these kamikaze manuals work well to bring alive in the classroom a usually mundane yet fundamental corner of technical communication. Of particular interest, given the growing interest in intercultural rhetorics, would be not only drawing further attention to the context of military documentation but how different militaries have taken differing approaches to the same mundane task. Bernhardt's manual analysis would be enriched, for example, when placed against a contrast such as the "Tigerfibel" and "Pantherfibel" manuals (which used sex as well as elaborate rhyming to entice reading) issued to German tank crews in WWII.

In the West, we often valorize our military for selfless, solo acts; think of the almost stereotypical soldier who falls on a grenade to save his comrades, or another who charges an enemy machine-gun nest alone. We are not equating these with the *Togo*, but it is, again, hard to distance ourselves from the emotion inherent in an act that demonstrates a near-total disregard for self, even when the testimony of the pilot diaries suggests this was often a fatalistic veneer constructed to deal with an effectively inescapable fate. We hope this analysis can serve as an initial effort toward future,

fruitful rhetorical explorations of military technical communication, as well as the increased inclusion of such unique examples in curricula focused on writing instructional texts.

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Fostering Industry Connections through Workplace-Situated Graduate Student Research

by Julie Watts

ABSTRACT

Purpose: This study examines the value of requiring online master's students in technical and professional communication (TPC) to design and conduct an independent research (IR) project as part of degree completion. Given that IR is a requirement in only a small percentage of TPC programs nationally, I wanted to discern IR's value academically and in terms of applicable workplace skills, the benefits and challenges of conducting workplace-situated IR, and IR best practices.

Method: I conducted focus groups with faculty and surveyed alumni, students, and advisory board members to analyze IR perceptions.

Results: Respondents indicated that IR is an important intellectual outcome and desirable workplace skillset. Additional benefits include more ready engagement by students in workplace-situated IR and the potential to address workplace communication problems. Challenges involved gaining permission for a study, communicating IR recommendations to industry stakeholders via the academic thesis genre, and implementing workplace change based on IR results. IR best practices included embedding IR throughout coursework, providing sufficient resources, establishing a schedule, working with an advisor, and cultivating peer support.

Conclusion: IR's academic and professional value needs to be better communicated to prospective and current students, faculty, and industry stakeholders. Students need guided opportunities to reflect on IR's value to them as students and professionals, and they should have opportunities throughout coursework to identify an IR topic and build on it. More resources and opportunities for peer-to-peer IR support need to be developed as well as an alternate IR deliverable, more conducive to communicating research results to industry.

Keywords: research, technical and professional communication competencies, academia-industry divide, online teaching and learning

Practitioner's Takeaway:

- IR is a valuable academic and professional skill, helping technical communicators to practice identifying, researching, and solving communication problems and making them more marketable in the TPC industry.
- IR can investigate industry issues and help shape workplace communication.
- IR can connect academia and industry, providing student-professionals opportunities to use knowledge and skills from their courses and strategically apply these to investigate improvements to workplace communication practice.
- All stakeholders in the research process (students, faculty, employers) need support to best realize the benefits of research and its applications to industry's communication issues and challenges.

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The technical and professional communication (TPC) field has experienced an increase in degree and certificate programs, with baccalaureate, graduate programs, and professional development certificates more plentiful than ever (Melonçon, 2009; Melonçon, 2012; Melonçon & Henschel, 2013). Given this, programs must seek innovative ways to prepare technical communicators and to distinguish themselves from other credentialing opportunities (Johnson et al., 2018; Tillery & Nagelhout, 2015).

Our institution has offered an online master's of science in TPC for 10 years, distinguished by what Lisa Melonçon (2009) calls a research-based "cumulative experience" (p. 141). A cumulative experience is a "thesis, project, portfolio, or practicum"—anything that "culminates the coursework of the graduate degree" (p. 141). Our program requires each student to work with an advisor to propose, design, and conduct independent research (IR), with the paper submitted to the Graduate School as a step toward degree completion. Few master's programs require a similar experience: "68% of schools require a cumulative experience. Only 11% of schools require a traditional research based thesis, whereas most (70%) offer the thesis as an option" (p. 144). Our program's IR often is workplace-situated, addressing or solving an organization's communication issue. Because our university has promoted this for many years, the Graduate School includes this focus in its definition: "The paper . . . applies research methodology and principles relative to a particular discipline to solve a problem for a regional organization the results of which might apply only to the participating organization" (*Research Guide*).

I asked students, alumni, faculty, and advisory board members to analyze their perceptions about IR. This study's impetus was three-fold. First, our students are working professionals, with the majority not planning to seek a doctoral degree. I wanted to investigate what benefits these students thought they gained from completing IR and whether they perceived these to be applicable in the workplace. Rachel Spilka (2009) argues that undergraduates who learn about research possess useful workplace skills. I wondered if student experiences completing IR during a master's program translated similarly.

Second, our field encourages collaboration between academics and practitioners, especially conducting and disseminating research (Blakeslee, 2009; Spilka, 2000;

see *Technical Communication* 2016, special issue on Improving Research Communication). One way of beneficially connecting these spheres is to collaborate on research that matters to both groups (Blakeslee & Spilka, 2004). Given this, I wondered how IR has been accepted into workplaces and whether project results have impacted workplace practices.

Third, I wanted to improve students' experiences with IR. Of the students who completed IR, 40% have not finished within the semester timeframe identified as "standard" for its completion, suggesting that students' preparation or their experiences could be improved. For many, completing IR increased their time-to-degree by at least one semester and has lengthened faculty advisement time accordingly. While degree completion issues are not uncommon (Denecke et al., 2009), one goal is to improve students' experiences and to examine how IR is scaffolded in the program. In addition, scholarship recommending how to mentor students about research focuses mainly on doctoral students (Carpenter, 2015) and often does not attend to workplace-situated studies, which present unique challenges (Grant-Davie, 2005).

For my two-phase study, I answered these questions, conducting faculty focus groups and surveying alumni, students, and advisory board members to analyze IR perceptions. The results show the value and challenges of applying academic research to workplace problems, IR's potential marketability, and how to foster connections between academia and industry.

- What value is IR to master's students academically and in terms of applicable workplace skills?
- What are the benefits of conducting IR in the workplace? What are the challenges?
- What best practices do faculty, students, alumni, and advisory board members recommend for engaging in IR?

LITERATURE REVIEW

To situate these research questions and my study, I analyze how research is included in TPC curricula, the debate about the value of learning research, and how research may address TPC's academia-workplace divide.

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Research and Mentoring in Graduate Curricula

In her article advising prospective students about TPC graduate school, Angela Eaton (2009) writes that the inclusion of research as a program learning outcome differs between the master's and doctorate: master's programs "always prepare graduates to consume research and sometimes produce it," while doctoral programs "always prepare [graduates] to produce it" (p. 150). This characterization is echoed in a curricular review of TPC master's programs: nearly half of programs (48%) require a research methods course. However, only a small percentage of programs require students to conduct research as a cumulative experience (Melançon, 2009).

Joyce Locke Carter (2013) describes how research is incorporated into the online Ph.D. program in technical communication and rhetoric at Texas Tech University. She writes that it includes a demanding expectation for research practice: "We have the most rigorous course requirements in research methods (4 courses) in the field of writing studies" (pp. 249–250). Students must attend an annual May Seminar, a two-week experience scheduled on campus. Students present their research, with faculty and peers "offer[ing] formative criticism designed to address performance, poster design, and engagement" (p. 263). Faculty share research in progress, "to model what we think scholarly inquiry looks like and to hopefully show our students what sharing formative ideas looks like" (p. 263).

Brent Henze (2006) analyzes a research-based internship designed for master's students at East Carolina University. He believes that this internship benefits employers and students who work in industry (a population that does not benefit from the traditional internship model). In this "research-experiential internship" (p. 341), students locate a workplace problem that demands "advanced research in professional communication" (p. 342). The internship marries academic and industry work, by "tak[ing] advantage of the productive tension between the workplace goal (of solving the problem) and the academic goal (of using the problem as a learning opportunity)" (p. 344).

Another approach, also connecting academia with workplace contexts, is situated in an online graduate program. Keith Grant-Davie (2005) explains that the program's internship was revised into "supervised workplace research projects" in which students were asked "to reflect on some of the practices in their workplace and to approach them with the critical eye of a researcher" (p. 221). Students were prompted to engage in "praxis . . . involv[ing] migrating frequently between application and reflection, between doing and pondering the ways things are done" (p. 222). A challenge of this approach was preparing students to conduct research. Using a committee structure (a chair and two faculty members) to advise each internship, Grant-Davie noted that teaching research methods appropriate for carrying out the project often fell to the chair: "Training individual students to conduct primary research was a very inefficient way to teach" (p. 227). Students' lack of background in research methods and the demand on faculty time unfortunately led to the internship's dissolution.

Formalizing into the curriculum these types of research opportunities is challenging but necessary. Jennifer Turns and Judith Ramey (2006) report on the University of Washington's credit-based research groups, recommending that deliberate program integration is key to long-term success. These groups are vertically integrated, involving faculty, graduate students, undergraduates, and even community members. Participants may be involved from start to finish or they may assist with data analysis. The authors note that participants learn a great deal and cultivate disciplinary identity: "The opportunity to gain high-context insider knowledge associated with solving these problems (and subsequently to use that knowledge) . . . lead[s] to opportunities to feel more central to the research community, thus developing more of a researcher identity" (p. 304).

As these authors show, having students achieve research outcomes often involves more than simply enrolling students in courses: Students need to apply their skills and be mentored. Beverly Zimmerman and Danette Paul (2007) show that the TPC classroom is a valuable mentoring site. Mentoring complements the teaching relationship by "providing students with a role model or a sense of what they can become in the field . . . and developing a deeper and more ongoing supportive relationship with students" (p. 179). Mentoring programs are excellent ways for students to partner with professionals. The Society for Technical Communication (STC) coordinates the STC Mentor Board, pairing mentors with mentees, "foster[ing] personal and professional growth" (STC Mentor Board). While a

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TPC mentoring relationship takes on many forms (Eble, 2008), in the broader literature about research mentoring, best practice guides about dissertation advisement are most numerous (Carpenter, 2015).

Many of these offer advice for successful dissertation completion, including scheduling and developing a support network (Kochon, 2015) and identifying roles that faculty should adopt to help ensure student productivity. Serena Carpenter and her colleagues (2015) found that, besides the research role, faculty should adopt intellectual (research guidance), psychosocial (encouragement), and career roles. Vicente Lechuga (2011) also emphasizes that mentors help "develop graduate students' sense of professional competence" (p. 766). Assisting students in this way means working to "operationalize equality" between faculty and student "by showing respect and mutual concern" (Miles & Burnett, 2008, p. 117).

One study examining the mentoring relationship between a faculty member and her undergraduate TPC researchers echoed these findings. Seven independent-study students collaborated on a project in which they applied research, presentation, and publication skills (Eaton et al., 2008). Students' experiences participating in all stages of research was "an entirely new kind of learning" (p. 171). The project was successful because students were "research partners" and engaged in group decision-making (p. 160). Working with a mentor meant that research became "personalized": "I let them see that I didn't always know the answer, and that I often double-checked my initial inclinations using research texts" (p. 161).

Value of Research to Students and Professionals

Technical communicators are being hired into the "creative economy" in which problem-solving and research skills are critical (Bekins & Williams, 2006, p. 287). Many argue that a "greater variety of methods" should be present in program curricula (Rude, 2009, p. 177), and others lament that "research training" in TPC "is still uneven" (Blakeslee, 2009, p. 146), even though research methods is one of the "essential aspects of technical communication" (Melançon & Henschel, 2013, p. 59).

Some suggest that research should be taught more frequently, but others believe its definition should be examined. Rachel Spilka (2009) maintains that undergraduates need to know more about research conducted in the workplace, which she calls "practitioner research," which is "conducted by technical communicators as part of their routine or their specialized job responsibilities" (p. 217). Practitioner research is "local and limited, confined to the solution of internal problems" and with the potential to be "diverse . . . across types of contexts, [and] situations" (p. 217). Practitioner research often is not disseminated, making it "invisible to academics" (p. 224). Thus, research possesses flexible meanings and purposes relative to its context. Indeed, examining TPC studies analyzing which skills employers and alumni value suggests that to be true. Identifying skills valued by TPC professionals and managers is important for students and faculty to know (Kim & Tolley, 2004). Several studies indicate that research is not a skill used by TPC professionals. However, given the definition of practitioner research, this may not be the case; a handful of studies identify analysis or problem-solving skills that seem analogous to research.

Amy Whiteside (2003) surveyed and interviewed 24 TPC graduates from 10 undergraduate programs and 37 managers of technical communication units and conducted an analysis of schools' programs to "suggest areas where technical communication students may need more preparation before entering business and industry" (p. 305). In this study, research as such is not mentioned. However, 57% of managers and 21% of recent graduates indicated that more preparation was needed in "problem solving skills" (p. 213). Whiteside notes that "problem-solving skills" help one "to understand how the product and device works in order to articulate its function to the user" (p. 314). This work involves research—analyzing existing documentation, interviewing subject matter experts, and/or testing the device.

Clinton Lanier (2009) examined skills listed in 327 technical writing job ads during a three-month period. While research was not one of the identified skills, 12% of the ads called for "analytic skills" (p. 58). This term, similar to problem-solving, is not defined by Lanier; however, he does classify it as a subcategory of project management. Wielding skills in analysis is one facet of successful research in that documents, data, situations, and/or users must be examined carefully as part of nearly any research process. Using Lanier's study as a starting point, Rhonda Stanton's (2017) survey of

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five recruiters and 60 job ads to determine what skills hiring managers look for in entry-level TPC employees found that "problem-solving skills" were "an important consideration when interviewing candidates" (p. 227). Likewise, "analytical skills" were included in nearly 25% of the 60 job ads examined (p. 231).

Greg Wilson and Julie Dyke Ford's (2003) interviews with seven master's program alumni revealed that participants needed more "practice obtaining difficult information" and "learned the hard way that information is not always readily handed over" (p. 157). While this skill may involve ascertaining how to access subject matter experts, it also suggests having strategies to seek data to complete tasks, a characteristic of practitioner research. James Dubinsky's (2015) study involving eight TPC technology sector practitioners described how research was conducted—how "technical communicators gathered the data necessary to create usable products" (p. 125). The study showed that several "analytical approaches" were used—everything from "interviews with users or customers" to "focus groups" and "analysis of technical support or customer support data" (p. 125).

Literature suggests that the frequency of research differs by job or career sector. Eva Brumberger and Claire Lauer's (2015) analysis of 914 TPC job postings during a two-month period indicated that research was relevant to each of the five job categories they analyzed: technical writer/editor, content developer/manager, grant/proposal writer, medical writer, and social media writer. However, the percentage in which research was mentioned as a competency differed by category, with research being most frequently cited in grant/proposal writer (62%), medical writer (50%), and technical writer/editor ads (40%), and less frequently mentioned in content developer/manager (28%) and social media writer (28%) (p. 236). Craig Baehr's (2015) study also indicated differences in the frequency of research: "Research skills are acknowledged as important in user-centered content development, yet not considered to be absolutely essential to specific organizational roles" (p. 113).

Other studies note the presence of research but indicate its use is low (Hart & Conklin, 2006; Giamonna, 2004). Kenneth Rainey and his colleagues (2005) used surveys and interviews with 67 TPC managers to identify TPC competencies. Conducting research was identified as a "tertiary competency" along

with usability testing, content management, budgeting, and awareness of cultural differences (p. 323). Similarly, Miles Kimball's (2015) study ranked field research and usability research at the bottom of a list of TPC competencies: "This ranking reinforces evidence suggesting that usability testing and field research may be *ideal* skills, but not ones that practicing professionals have much time to apply" (p. 139).

Research and the Academia-Workplace Divide

In their study analyzing stakeholder theory and program administration, Jim Nugent and Laurence José (2015) confirm the presence of an academic-practitioner divide: "As a theoretical discipline rooted in workplace practice, technical communication finds itself circumscribed by a persistent dichotomy between academy and industry" (p. 11). Carolyn Rude (2015b) believes that cultivating shared goals between academia and industry strengthens our discipline but that "barriers" include perceptions about differing "values and cultures," an inability to establish a "shared research focus," and limited access to "meet in shared forums" (p. vi). Rude recommends establishing joint research questions: "Conversations about shared interests and needs should occur at the program level and beyond to determine foci for research" (p. vii).

Bridging this divide is important, in that mature disciplines rely on research to drive workplace practice, and this practice drives research (Spilka, 2000; Tebeaux, 1996). Research helps to build not only TPC's identity but also individual professional identities (Rude, 2009; Rude, 2015a). Research strengthens our field, including scholarship about teaching and learning (Pope-Ruark, 2012) and studies in which academics and practitioners find value (St.Amant, 2015). Research collaboration enables academics and practitioners to "help one another professionally" and to achieve a "broader understanding about research across the greater field" (St.Amant & Melonçon, 2016, p. 346). Collaboration encourages everyone's strengths, emphasizing that "[p]ractitioners do not belong to a simple homogenous category, and, of course, academics do not either" (Lauren & Pigg, 2016, p. 309).

Studies recommend strategies for using research to diminish this divide, noting that all research phases can be reevaluated. Gaining access to industry for research is challenging (Rude, 2009). However, when access is gained (Spinuzzi, 2010; Gollner et

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al., 2015), the benefits are clear. The workplace is only one type of site: other more novel environments for academic/practitioner collaboration include the classroom (Thrush, 2006) and electronic spaces such as the TCBOK, a technical communication body of knowledge wiki developed by a group from STC. The TCBOK, which assembles critical TPC knowledge, involves academics and practitioners (Coppola & Elliot, 2013).

Studies also recommend approaches for rethinking what questions to investigate. In studying TPC's "core content" and its audiences, Ryan Boettger and Erin Friess (2016) argue for conducting research addressing industry issues: "Groups . . . (journal editors, bloggers, subsections of academics) must communicate, align and devise concrete solutions to real problems," all the while "enable[ing] practitioner perspectives to influence our content more" (p. 324). Carolyn Rude (2015a) echoes this by noting that research should "facilitate industry practices" (p. 359) and researchers should "construct better, and more relevant, studies that could have potential generalizable application" (p. 357).

Toward this end, Joel Kline and Thomas Barker (2012) recommend a model for helping practitioners and academics to collaborate: a communities of practice CANFA model (collaborate, apply, facilitate, negotiate, and activate). They note that CANFA enables both groups to cultivate "one negotiated professional identity" since "professionalism rests on accepting and then transcending academic or practitioner identity" (p. 45).

Reaching academic and practitioner audiences is critical, and studies recommend dissemination approaches such as publishing research in venues other than academic journals (Boettger & Friess, 2016). In addition, research should be drafted with the "information-seeking needs of industry practitioners" in mind (St.Amant & Melonçon, 2016, p. 353), mimicking the "dissemination patterns that are used and valued by practitioners," including concision and "report[ing] the most actionable and practical information" (Hannah & Lam, 2016, p. 340).

Solutions for completely ameliorating the academia-workplace divide have not been entirely successful; however, the argument for doing is strengthening. My study of the value of incorporating IR into a master's program may provide another avenue for using academic research to help address industry problems and shape workplace communication trends.

RESEARCH DESIGN

IR Program Requirement

Four of our 10 program learning outcomes concern research, and IR is a required step toward degree completion: Students must "have the primary responsibility for designing, conducting, and reporting the research," understand and ethically apply "the basics of research design and data analysis," and "effectively communicate ideas in writing" ("Research Expectations," *Research Guide*). Students may fulfill their IR credit in one of two ways: ENGL-735 or ENGL-770. Three credits (ENGL-735) of the 30-credit degree can be IR; each student works with a faculty advisor to complete it. Students may enroll for 6 IR credits (ENGL-770), graduating with a 33-credit degree; in this case, the IR is advised by a three-member faculty committee. Students planning to pursue doctoral studies often enroll for 6 credits. The deliverable submitted to the Graduate School for ENGL-735 and ENGL-770 uses the same template, an academic thesis format. During the last five years, 17% of IR projects were 6 credits. In my analysis of the student and alumni surveys, I did not distinguish between respondents who enrolled for 3 or 6 IR credits.

Students are advised to complete IR during their final program semesters, and most enroll for IR during their final semester. Students work with the program director to identify a research topic and draft a prospectus, describing the research questions, methods, and a brief literature review (Appendix A). Students are encouraged to look to their workplaces for potential topics, although doing so is not a requirement. Once a prospectus is complete, students email their draft to a faculty member with whom they are interested in working. Once an advisor is identified, the student is enrolled into IR, which students have one year to complete.

In my program, IR has been formalized into the curriculum (Turns & Ramey, 2006). While IR is not an internship, it closely resembles the "research-experiential internship" described by Henze (2006), as projects often focus on investigating a workplace problem. While students learn about research methods in their courses, a responsibility for helping students to conduct research and write up their results falls to the advisor (Grant-Davie, 2005).

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Methods and Participants

After Institutional Review Board approval, I conducted a two-phase study, collecting data in 2015 and in 2019. Table 1 shows the number of participants for each phase.

Student and alumni surveys

During 2015 and 2019, I distributed surveys to alumni (Appendix B) and students (Appendix C) to determine their IR satisfaction. During both phases, participants received individual email invitations via Qualtrics and surveys were available for five weeks.

Table 1. Study participants

2015 Participants	2019 Participants
15/35 students (42%)	30/40 students (75%)
9/31 alumni (29%)	16/52 alumni (31%)
7/20 board members (35%)	9/14 board members (64%)
5/7 faculty (71%)	4/4 faculty (100%)

Board member surveys and interviews

During 2015, I distributed a survey to all program advisory board members, which included faculty and employers, capturing their IR perceptions (Appendix D). Given the industry-focused nature of the study, I wanted to target industry voices for phase two. In 2019, I collected interview data from 14 of the 20 board members—only those employed in industry. To do so, I individually emailed each participant questions 2–5 from the 2015 board member survey. This standardized, open-ended interview strategy allowed me to ask the same questions to each participant and to use their time efficiently (Quinn Patton, 2015).

Faculty focus groups

During 2015, I invited program faculty with IR experience to a 1-hour focus group meant to capture advisor and student best practices (Appendix E). During 2019, additional faculty had IR advisement experience, and I invited them to a focus group, using the same questions and one-hour timeframe. Focus groups were preferable, allowing for "enhanced data quality" in that participants heard others' responses and could contribute to the conversation (Patton, 2015, p. 478). I audiotaped the sessions and served as notetaker and facilitator. I transcribed the sessions, identifying relevant themes.

RESULTS

IR Value Academically and Professionally

As program director, answering this question about IR's value to students academically and professionally is critically important. Discerning what these stakeholders perceive about IR allows me to better engage in key conversations about program value. For example, when future industry partners ask me, "Why is IR worthwhile? Why should I potentially devote company resources toward supporting this?" I can tell them. Similarly, when prospective students or new graduate faculty ask me, "Given the time it takes to complete IR as well as the resources needed to support IR instructionally, why should this be a program requirement?" I can tell them. Most important, the responses demonstrate that IR is a common denominator in terms of value to both academia and industry. Thus, IR can assist in cultivating shared goals between these spheres, strengthening our discipline and helping to break down "barriers" about differing "values and cultures" (Rude, 2015b, p. vi).

Table 2 summarizes the results of student, alumni, faculty, and board member perceptions about IR's value, academically and professionally, identifying four major themes. While not all respondents used the surveys or focus groups to comment about IR's value,

those that did agreed that IR is an important academic skill to practice (Melonçon & Henschel, 2013) and one that benefits students professionally (Spilka, 2009). The *intellectual gain* of completing IR was valuable, and this was the only theme that members of all groups mentioned. Alumni indicated that a value of IR was a *sense of satisfaction* about its completion, and primarily board members but faculty as well indicated that IR made students more *competitive in the job market*. Students and alumni noted IR's value for *workplace change*.

The intellectual gain noted by study respondents characterized IR as a stimulating, expected part of master's degree work. As one former student noted, "The whole process challenged me, and as a result, I improved my writing and learned much about conducting research" (Alumni Survey, 2015). With a board member concurring, "The IR could also be a great place to stretch, intellectually, a good bit" (Board Survey, 2015). Faculty agreed that earning a master's degree equated to IR skills proficiency: "Because if you don't come out of a master's program without being able to conduct IR, what are we doing?" (Faculty Focus Group, 2019). The IR is a true "cumulative experience;" as one board member noted, "I'm assuming the IR gives the student an opportunity to pull together all of their program learning, to date—a capstone of sorts. That type of exercise is invaluable for solidifying student learning" (Board Survey, 2019).

Some respondents also perceived that IR's value lay beyond its worth as a programmatically situated set of skills: "Research is the life skill, the professional skill where the real value lies" (Faculty Focus Group, 2015). One board member discussed IR's value in elevating academic learning and to students' industry success:

Table 2. Value of IR to students, academically and professionally

Intellectual Gain	Sense of Satisfaction	Workplace Change	Competitive in Job Market
S15	A19	S15	B15
S15	A19	S15	B15
S19	A19	A19	B15
A15	A19	A19	B15
A19	A19	A19	B19
A19		A19	B19
B15			B19
B15			B19
B19			B19
B19			B19
B19			B19
F15			F15
F15			F19
F19			
F19			
F19			

S15=Student Survey, 2015 **A15**=Alumni Survey, 2015 **B15**=Board Survey, 2015
S19=Student Survey, 2019 **A19**=Alumni Survey, 2019 **B19**=Board Survey, 2019

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Students spend a majority of their academic career responding to questions, prompts, and problems that have been pre-figured for them to achieve specific learning outcomes, and an IR project removes those guardrails, requiring that they fashion their own questions, methods, data collection, analysis, and reporting. Moreover, to be successful, they need to do this while seeking out and responding to feedback from mentors and stakeholders. This sort of work more closely matches the level of ownership they'll need to have in their professional lives to be successful. (Advisory Board Survey, 2019)

Alumni respondents seemed to concur with this, noting the satisfaction of IR completion, "I never thought I could tackle a project as extensive as IR but so happy I did and to this day remains as one of my most significant accomplishments" (Alumni Survey, 2019).

Respondents, particularly board members, perceived that the possession of IR skills made students more marketable. Respondents noted that IR distinguishes students employed in their current role: student-employees "go above and beyond their colleagues by showing initiative, brighter ideas, and a higher ability to spearhead projects independently or in a team setting" (Board Survey, 2019). Possessing IR skills helps with employee review: "Research skills are invaluable when evaluating job candidates as research often builds strong critical thinking skills, ability to analyze large data sets into key take-aways, ability to translate numbers into writing, etc." (Board Survey, 2019). Students are competitive for new positions: "I view the capstone project as a positive approach and potentially a differentiator for the program. As a hiring manager, an applicant with applied experience is significantly more valuable than one with the credential, only" (Board Survey, 2015).

Some student and alumni respondents indicated that IR's value meant facilitating change in their workplace. Some indicated that change occurred: "The results of my research have been well-implemented at my current organization and have positively impacted public-facing communication" (Alumni Survey, 2019). While others pointed to its potential: "It started a discussion about an issue that my coworkers weren't aware of" (Alumni Survey, 2019) or "Hopefully it will

bring problems to light and create change to resolve them" (Student Survey, 2015).

Benefits and Challenges of Workplace-situated IR

An obvious benefit of workplace-situated IR, as evidenced by the discussion above, is the value it brings to students. However, faculty and board members noted other benefits. Faculty discussed the exigence that workplace-situated IR brings to a project: "There's automatic engagement. Essentially [students] have an audience. They are doing this for their employer or for what they're doing on a day-to-day basis" (Faculty Focus Group, 2015). Faculty noted that a workplace context often facilitated research:

It's a problem that they are trying to tackle not just to check a box or to get a piece of paper, it's their job. . . . That reality impacts the work because the contexts are right in front of them. So that in some ways makes doing the research easier. (Faculty Focus Group, 2019)

Board members cited other benefits of IR, including happier employees ("allowing employees to explore their curiosities and passions, which ideally pursues retention long term") and improving the company's bottom line ("it's also cheaper than hiring a contractor to do the work") (Advisory Board Surveys, 2019).

Much like student and alumni perceptions about IR's value to workplace change, board members and faculty also articulated this as a benefit. Several board members noted IR's potential to impact decision making in several ways: "using data to drive decisions;" IR "would allow for an in-depth look at a particular duty or aspect of a job that otherwise may be overlooked;" and an "opportunity to examine an issue using the latest theories, approaches and potentially some different tools" (Advisory Board Surveys, 2019). Faculty also noted the enthusiasm students have for workplace-situated IR: "His project applies to his job so there's this extra thing that he really wants to know and really to take back" (Faculty Focus Group, 2015).

Table 3 shows the percentage of student and alumni respondents in 2015 and 2019 who completed or were in the process of completing workplace-situated IR as well as the levels of support they received. Table 3 shows whether IR results were communicated to stakeholders

and notes their impact on altering workplace practice. The fairly high percentages of supervisor and colleague support are not surprising, as students who propose IR generally do so within their companies and need to have approval and often colleague support. In 2015, 50% of respondents indicated that their IR "helped to change practice(s) at my workplace," while this percentage increased to 60% in 2019.

Enacting such workplace change can be challenging, however, and students and board members discuss why. IR often does not point to recommendations: "My results were very mixed, which made it difficult to suggest any concrete changes to the communication process I studied" (Student Survey, 2015). Sometimes, the results do recommend action but the organization is challenged to implement it: "If

processes have been in place for several years, it can be difficult to convince others to try something new" (Advisory Board Survey, 2015).

Respondents also noted the difficulty of simply launching workplace-situated IR. Employer reluctance, access to data, employee/colleague collaboration, and timing were just some of the challenges: "Supervisors and the IR department are concerned of anything that might not show my employer in a favorable light. As soon as they found out my paper would be published they forbid a survey and use of non-public data" (Student Survey, 2015). Often, IR data are proprietary: "Legal departments almost always need to get involved to determine issues of confidentiality of information" (Advisory Board Survey, 2015) and "privacy issues and data security/protection regulations are increasingly

Table 3. Student and alumni impressions of workplace-situated IR, 2015 and 2019

Student and Alumni Survey Respondents (2015)		
7/15 Students 3/9 Alumni	42%	Completed or in the process of completing workplace-situated IR
5/7 Students 3/3 Alumni	80%	Supervisor was supportive of their IR project
6/7 Students 3/3 Alumni	90%	Colleagues were supportive of their IR project
3/7 Students 2/3 Alumni	50%	Research project results were communicated to supervisors/colleagues
3/7 Students 2/3 Alumni	50%	Research project results helped to change practice(s) at my workplace
Student and Alumni Survey Respondents (2019)		
3/30 Students 12/16 Alumni	33%	Completed or in the process of completing workplace-situated IR
2/3 Students 11/12 Alumni	87%	Supervisor was supportive of their IR project
2/3 Students 11/12 Alumni	87%	Colleagues were supportive of their IR project
1/3 Students 10/12 Alumni	73%	Research project results were communicated to supervisors/colleagues
1/3 Students 8/12 Alumni	60%	Research project results helped to change practice(s) at my workplace

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strict" (Advisory Board Survey, 2019). Involving colleagues can be difficult: "Employers are busy and it's hard to fit more meetings into their schedule" (Advisory Board Survey, 2015). When an industry project needs to be launched immediately, phases of research may not coordinate: "Viability would be hindered by the lead time that it takes to gain IRB [institutional review board] or similar approval" (Advisory Board Survey, 2015). Supervisors also may be uneasy about incorporating IR into existing duties: "how the research would insert itself into [employees'] workflow and how much time it would take up" (Advisory Board Survey Survey, 2019).

Faculty also noted that workplace-situated IR may possess different challenges than other IR. Notably, students can become overanxious to address their workplace singularly: The IR topic "can be too narrow at times. I [as faculty advisor] need to bring it out a little bit and to think more broadly about it . . . to also show how it would be relevant to other industries" (Faculty Focus Group, 2015). Students can be reluctant to situate the issue within TPC literature: "The con there too is . . . not wanting to find the literature because they're so into solving the problem" (Faculty Focus Group, 2015). Likewise, students may be hesitant to examine the topic using a theoretical lens, saying, "If it's a workplace piece . . . then why do I need all of this theory to inform it?" (Faculty Focus Group, 2019).

While the IR deliverable prompts students to comprehensively situate their project and argue for their results, faculty noted that the deliverable, a templated academic genre required by our institution's Graduate School, was not the most effective for students to practice and limited their ability to communicate IR recommendations to workplace stakeholders and supervisors: "They need to conduct the research, they need to frame the study, they need to be able to understand it, but the writing up of that, sometimes I struggle if we need that" (Faculty Focus Group, 2019). Many institutions are moving away from a traditional thesis or dissertation format (Robinson & Dracup, 2008; Thomas et al., 2016), and some faculty expressed that they would like more choices: "This field work is not like an academic thesis, this is a different beast. There needs to be more flexibility" (Faculty Focus Group, 2015).

Faculty noted that this academic format often stymied students' ability to communicate their IR

recommendations to industry. One faculty member explained:

> I feel like she [a previous advisee] should have been able to take that lesson she learned from her research and bring it back to her company . . . but there is no way that will happen if she said, 'Well, you should read my paper.' . . . But being able to design a project, do the research and then defend your arguments enhances [students'] ability to be able to become thought leaders in their industry. (Faculty Focus Group, 2019)

One former student echoed this sentiment, "I never really understood the purpose of all the formatting conventions of academic papers. . . . I was kind of embarrassed to send the full paper to colleagues because of this. . . . I think it would be ideal if the deliverable was something more fitting for a business environment" (Alumni Survey, 2019).

Faculty discussed the possibility of using other "not scholarly" deliverable forms to communicate IR results (Faculty Focus Group, 2015). They discussed the feasibility of requiring a presentation and/or slide deck where students would be asked to "talk about [the research] in intelligent ways," noting that an "oral defense" would better mimic what students would "do when you go out and stand in your board room, when people are saying, 'Why should we invest in X?' Well because" (Faculty Focus Group, 2019).

Faculty and students also commented on their confusion concerning the difference between ENGL-735 (3-credit IR) and ENGL-770 (6-credit IR). Like several programs at our institution, either course fulfills students' IR requirement, and the Graduate School does not distinguish clearly between the two. Moreover, the deliverable for both is the same (the academic thesis). In general, I advise those students who plan to pursue doctoral work toward the 6-credit option. However, a clearer distinction between the two options seems needed: "I think it should be a little clearer about the differing goals of the 735 vs. 770. . . . It's hard to say exactly why the goals became less distinct as I started the project, but I remember at the time thinking that myself and my adviser had slightly different understandings about the two options" (Alumni Survey, 2019). As faculty advisors commented, "The main components of both [options] are very similar. . . . The

basics are the same" (Faculty Focus Group, 2015) and "The thing that would help me . . . is having a clearer sense of the objectives of the IR requirement, and then if those are differentiated between the 735 and 770 paper" (Faculty Focus Group, 2019).

IR Best Practices
Because IR is an individualized pedagogical activity, I wanted to hear what participants thought worked and what needed work in terms of IR preparation and practice. While conclusions regarding the IR deliverable and IR course options will be examined in the subsequent section, several recommendations regarding curriculum integration, resources, and advisor and peer roles are discussed below.

Deliberate curriculum integration
I advise our students to identify IR as a concluding element in their degree, with most enrolling for IR during their final semester. Respondents indicated that students should discern IR topics earlier, with IR better integrated throughout the program: "Begin the discussion of the thesis in the very first class and carry it through so that students do not wait until they are done with their classes to begin thinking about what they would like to write about" (Alumni Survey, 2015). A student recommended, "Start the research paper in a required introductory course within the first nine (9) credits, preferably taught by the Program Director. . . . Setting it up early means students can incorporate what they learn in subsequent courses" (Student Survey, 2015).

Resources and models
In 2015, 61% percent of alumni respondents stated that the IR information on the program website helped to "prepare them to engage in IR"; in 2019, this percentage increased to 68%. While students are using Web resources, more information is needed. Students were challenged to develop their IR topics, so more resources could be devoted to this: "Actually coming up with the idea and the proposal was very difficult. I would have loved a lot more guidance on that process" (Alumni Survey, 2019). Respondents wanted more detail describing "how to find a chair, write the proposal" and so forth (Alumni Student Survey, 2015). Faculty also wanted a "clearly defined guide" stipulating the "skills students should need" coming into IR, using language from the program outcomes, so faculty and students would better understand what preparation students need before embarking on IR (Faculty Focus Group, 2019).

Advisor role
Respondents agreed the faculty advisor was key in IR success: "Personally, I need my advisor to help keep me grounded and set a reasonable scope" (Student Survey, 2019). One student indicated the advisor should be selected earlier: "I think students would have to pick an advisor before 50% completion of degree. That way the advisor and student can establish communication, set up the goals, proposed timeline, hone the topic etc." (Student Survey, 2015). Advisor availability also was important: "My advisor was very dedicated to guiding me through the research process" (Alumni Survey, 2015). As one student noted, "I never felt as though I was alone in my work and could always reach out to the program director or advisor" (Alumni Survey, 2019). Providing "timely feedback" was critical (Alumni Survey, 2019)—as one faculty member stated: "I try to be quick in terms of reviewing their drafts. I ask students to tell me what specifically they want me to look at" (Faculty Focus Group, 2015).

Schedules and contact
Students establish an IR timeline in their prospectus, and this was important to success: "Set up a timeline and stick to it. It's easy to fall behind without hard deadlines" (Alumni Student Survey, 2015). Several students spoke to this by noting IR's time-consuming nature: "Give yourself lots of time to complete the project and do lots of prep work. Everything seems to take longer than you think it will" (Alumni Survey, 2019). Several alumni recommended students select topics they were "passionate" about: "This project takes up so much of your time and life that you don't want to be consumed with a topic that you're only 'somewhat' interested in" (Alumni Survey, 2019). Faculty also noted the importance of consistent contact: "[Weekly meetings] gives them some accountability, and even if there is really very little to report at least you do check in" (Faculty Focus Group, 2015).

Peer support
Figure 1 shows how students and alumni who completed IR responded to the question, "Whose feedback, advice, support helped you to complete this research?" The

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most critical support systems included the advisor as well as friends/family. The lowest rated category was "my fellow students." This lack of peer-to-peer support also appeared in other responses: "As an online student I suspect I missed out on a lot of the support, discussion, and personal anecdotes about the research process that were available to students who were closer to campus" (Alumni Survey, 2015). Another student noted that technology could have assisted: "As a distance learner, I didn't have a cohort of other students to get together with for ideas or help. But that could definitely be done remotely/virtually" (Alumni Survey, 2019).

CONCLUSION AND RECOMMENDATIONS

This study demonstrated that IR is valuable to TPC master's students academically and in terms of applicable workplace skills. Unfortunately, students do not seem to realize how competitive IR makes them

(Table 2). Given that only 11% of master's programs require IR as a cumulative experience, my program needs to do a better job of communicating this value to students and prospective students. This information needs to be integrated into existing marketing materials, including the program's website, its print and video promotional materials, and in its prospective student communication. A synopsis of the study results can be integrated into these materials along with survey and focus group quotes. Expertise from the advisory board also should be tapped to learn how they believe IR's value should be communicated.

Students should be prompted to reflect on what IR has taught them academically and professionally. Once students have completed IR, they have no guided opportunity to reflect on this, even though reflection is highly beneficial (Westberg & Jason, 2001). Our program requires incoming students to complete a course-embedded online student orientation to help
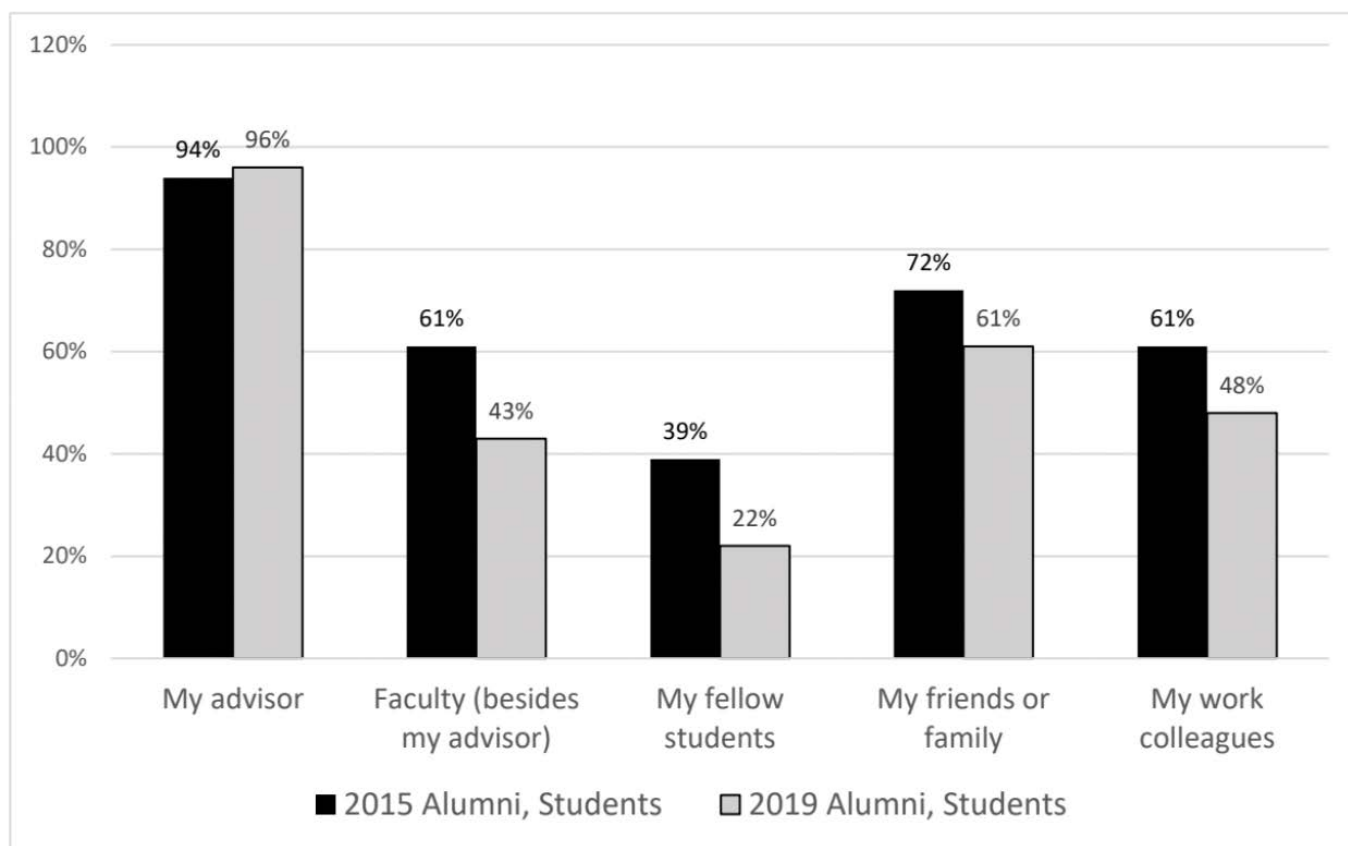
Figure 1. "Whose feedback, advice, support helped you to complete this research?"

familiarize them with the skills and behaviors they should possess to succeed online (Watts, 2019). A second online orientation of sorts may be needed before students exit the program: one used to help students analyze their learning and its benefits. This online experience could be modular and self-paced, and students could reflect on their courses, IR, and how these experiences helped them to achieve the program's learning outcomes and what this achievement says about them as TPC professionals. These results could be used in place of an exit interview and could complement existing program assessment and alumni surveys.

Several advising changes will be made to help improve students' IR preparation. Initially IR was conceived of as an experience completed near the program's end. Instead, students will be advised to identify an IR topic earlier and seek ways to build on that topic through coursework. A required course taken early in their program familiarizes students with TPC theory and research, and this course will now introduce students to the IR process and use IR as a lens with which to discuss and apply research. Students also will be encouraged to extend the length of their IR registration from a single semester to 2 or 3, which will give students more time to read, write, and think about their topic.

Results indicate that students rely on friends and family for support during IR but do not rely on their fellow students (Figure 1). Students do not have opportunities to connect with one another outside of courses. To address this, I am working with our institution's social media coordinator to launch a campaign using Facebook Groups to provide an alternate channel of communication for students, which also will invite prospective students, alumni, faculty, and board members. The Group could serve as a springboard for students to connect about IR questions and concerns, and for alumni, faculty, and board members to share their ideas.

Relying on existing program and Graduate School Web resources as well as an outdated program manual is not providing students, faculty, and industry partners the information they need to prepare for and engage in IR. Students and faculty need a pre-IR guide, linked to existing program outcomes, communicating clear expectations for student IR preparedness. The program outcomes concerning research should be invoked, as should the courses where such outcomes are practiced.

The guide should include expectations for the program director and advisor roles in IR, describing best practices for students and faculty. Inviting industry partners to complete a survey before, during, or after the IR project situated in their workplace is near completion could provide a wealth of information not only about best practices for timing and integrating research into the workplace but also how to impact workplace practice. Our institution's Career Services office engages similarly with industry when coordinating students' cooperative education, and their resources could be used as models. Providing feedback opportunities and extending resources to industry cultivates more substantive partnerships, helping to populate our board, recruit, and further improve IR. Achieving this level of communication with industry could go a long way toward breaking down the academia-workplace divide.

Study participants want to see more distinction between the 3-credit and 6-credit IR course options as well as an alternate deliverable in lieu of the traditional academic thesis. The 6-credit IR course option could retain the academic thesis format, while the 3-credit option could include an alternate deliverable, one more conducive to communicating research results to industry. Doing so would enable students who engage in workplace-situated IR to more effectively communicate their results and recommendations to stakeholders. Programs are moving away from traditional thesis and dissertation formats to better "prepare scholars for future professional pursuits" (Thomas, 2016, p. 82), noting that writing in traditional formats is "different from the process of completing research post-graduation" (p. 83). Concerns with alternate formats involve ensuring that students have adequate opportunities for engaging in "writing to learn" about the IR process, including posing research questions, situating the study in the research, and describing how methods were deployed (Faculty Focus Group, 2019).

The impetus for this study was three-fold: to investigate the benefits of IR to students academically and professionally, to identify how IR might encourage collaboration between academics and practitioners, and to improve students' IR experiences. The study shows that stakeholders perceive IR's value as an important intellectual outcome and desirable workplace skillset. Given this, the program aims to better showcase this value and work to sustain and improve it.

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IR provides opportunities to promote productive connections between academia and industry. Moreover, communication challenges that stymie workplace efficiency, accuracy, or productivity can find an audience with IR. Student-professionals, intimately knowledgeable about a workplace context and its communication challenges, are uniquely poised to collaborate with faculty and colleagues to help address or even ameliorate these challenges. Moreover, IR investigations promote an awareness of industry—its problems, values, contexts, practices, and so on—often not afforded to academics. The program aims to better facilitate this relationship—more satisfactorily preparing faculty and students for IR while listening and responding to industry feedback about strategies to integrate IR and implement any relevant recommendations.

The study shows specific ways not only to improve students' experiences with IR but also to improve the experiences of faculty and industry partners. More deliberate curricular scaffolding, additional resources, a formalized feedback loop from the program to the workplace and back, and alternate IR deliverable options are some of the strategies to be implemented. By instituting changes like these, IR will become a lynchpin, connecting academia and industry, providing student-professionals opportunities to use knowledge and skills learned from their courses and strategically apply these to investigate improvements to workplace communication practice.

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APPENDIX A

Prospectus

Before work on the field project or thesis begins, draft your prospectus:
- Draft a working title for your project
- Discuss the context/background for your project, defining any key concepts or terms. Also identify where you formed the idea for your project: is it something from your workplace? Did you write about the project in one of your classes?
- Describe the research question(s) that you wish to investigate
- Discuss the ways in which this question is significant to the technical and professional communication field
- Describe the benefits there will be to conducting this investigation
- Provide a brief review of literature, relevant to the question
- Discuss the methods that you plan to use to answer the research question(s)
- Include a timetable or work schedule for completing the 3-credit ENGL-735 Field Project or the 6-credit ENGL-770 Thesis

Share this prospectus with your committee chair, discussing and revising it as necessary. The prospectus should be a memo of understanding between you and your committee/advisor.

APPENDIX B

Alumni Survey

1) You completed Independent Research (IR) in order to fulfill the program requirements. Which IR course did you complete?
   ○ ENGL-735 Field Project
   ○ ENGL-770 Thesis

2) The objective of IR is to help you propose, design and implement a research project of your choice. What **prepared** you to engage in this research? (Select all that apply)

	0 10 20 30 40 50 60 70 80 90 100
My other coursework	▭
The work I do at my job	▭
Program director	▭
Faculty member(s)	▭
Info about Independent Research on the program web site	▭
Info about Independent Research on the Graduate School web site	▭
Other	▭

3) What could the program do to better prepare students to embark on their IR?

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4) Did your research topic examine an issue or problem that was occurring at your workplace?
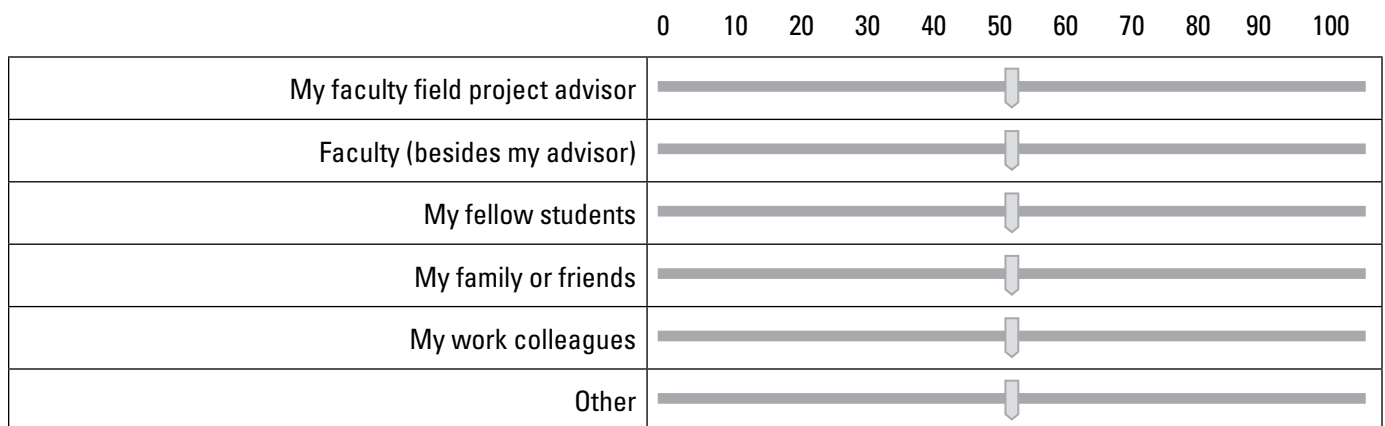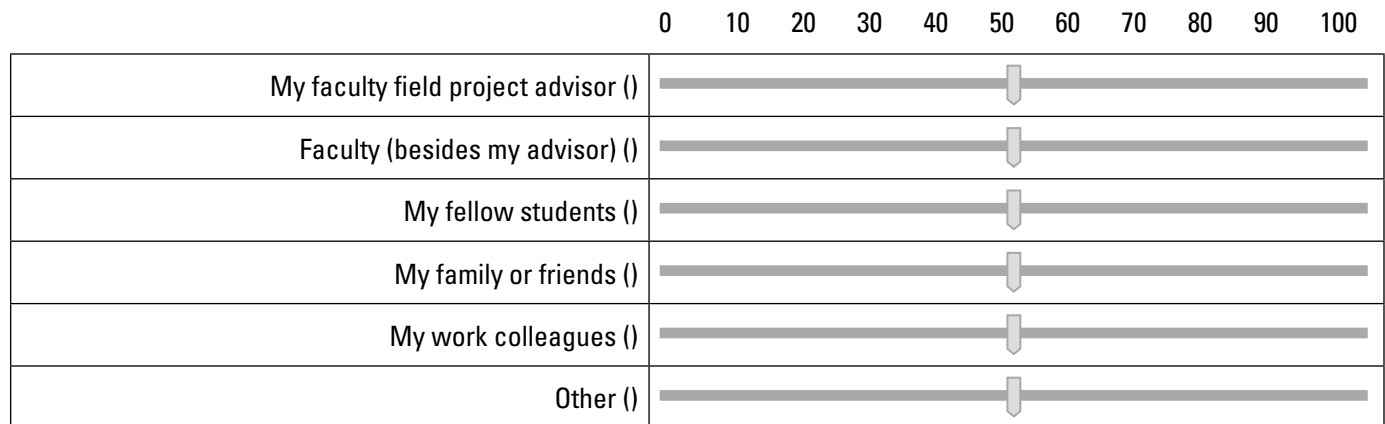   ○ Yes
   ○ No (Skip to Question 7)

5) How favorably did your workplace view your research project?

	0 10 20 30 40 50 60 70 80 90 100
My supervisor was supportive	▭
My colleagues were cooperative	▭
My research project results were communicated to supervisors/colleagues in my workplace	▭
My research project results helped to change practice(s)at my workplace	▭
Other	▭

6) What were the benefits and challenges of conducting research about a communication issue or problem at your workplace?

7) Whose feedback, advice, support helped you to complete this research?

	0 10 20 30 40 50 60 70 80 90 100
My faculty field project advisor	▭
Faculty (besides my advisor)	▭
My fellow students	▭
My family or friends	▭
My work colleagues	▭
Other	▭

8) What advice would you give faculty advisors to help students complete their independent research?

9) What advice would you give to current students to help them complete their independent research?

10) What other comments would you like to make about independent research?

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APPENDIX C

Student Survey

1) All students must enroll in Independent Research (IR) in order to fulfill the program requirements. Select one of the options below that applies to your current situation.
   ○ I am currently enrolled in ENGL-735 Field Project
   ○ I am currently enrolled in ENGL-770 Thesis
   ○ I am not enrolled in either ENGL-735 or ENGL-770 at this time. (Skip to Question 11)

2) The objective of IR is to help you propose, design and implement a research project of your choice. What **prepared** you to engage in this research? (Select all that apply)

	0 10 20 30 40 50 60 70 80 90 100
My other coursework	
The work I do at my job	
Program director	
Faculty member(s)	
Info about Independent Research on the program web site	
Info about Independent Research on the Graduate School web site	
Other	
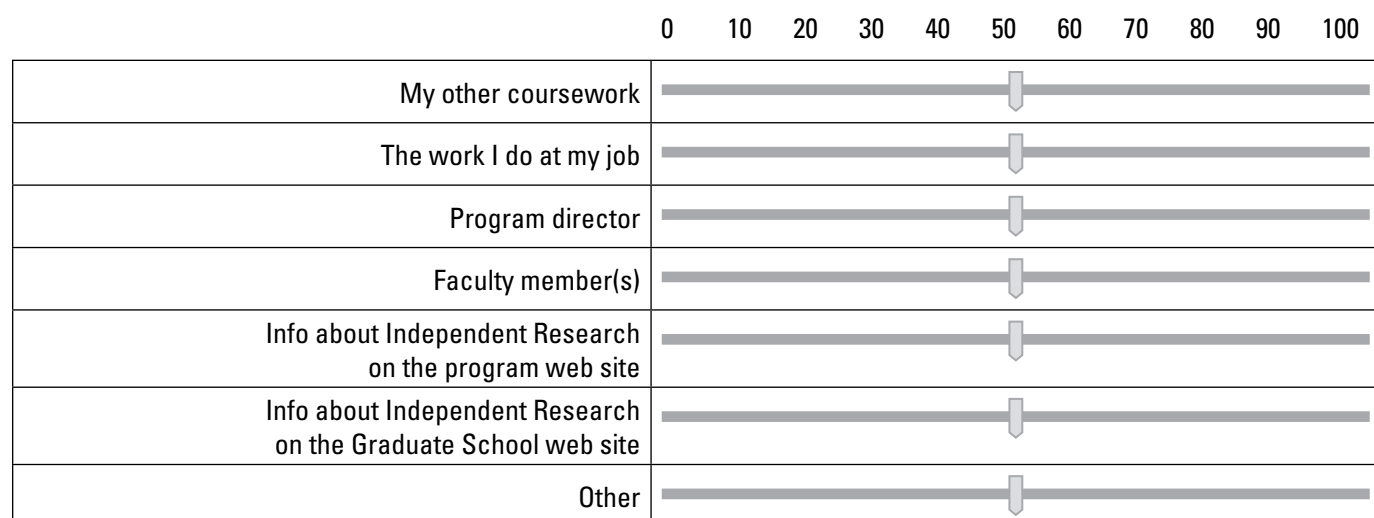
3) What could the program do to better prepare students to embark on their IR?

4) Did your research topic examine an issue or problem that was occurring at your workplace?
   ○ Yes
   ○ No (Skip to Question 7)

5) How favorably did your workplace view your research project?

	0 10 20 30 40 50 60 70 80 90 100
My supervisor was supportive ()	
My colleagues were cooperative ()	
My research project results were communicated to supervisors/colleagues in my workplace ()	
My research project results helped to change practice(s)at my workplace ()	
Other ()	
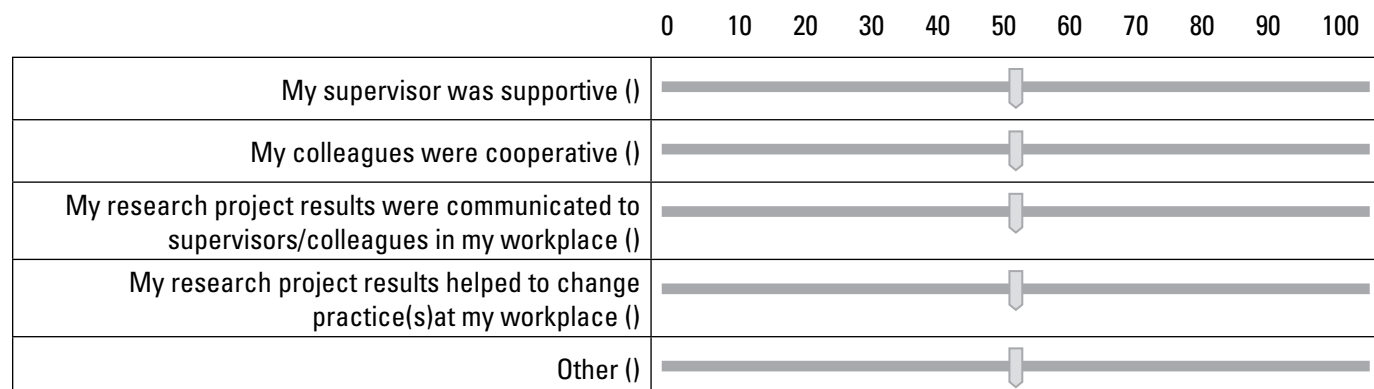
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6) What were the benefits and challenges of conducting research about a communication issue or problem at your workplace?

7) Whose feedback, advice, support helped you to complete this research?

	0 10 20 30 40 50 60 70 80 90 100
My faculty field project advisor ()	
Faculty (besides my advisor) ()	
My fellow students ()	
My family or friends ()	
My work colleagues ()	
Other ()	

8) What advice would you give faculty advisors to help students complete their independent research?

9) What advice would you give to current students to help them complete their independent research?

10) What other comments would you like to make about independent research?
   Survey Ends for students currently enrolled in ENGL-735/770 IR

11) The program includes an Independent Research (IR) requirement. Students are required to enroll in ENGL-735 Field Project (3 credits) or ENGL-770 Thesis (6 credits) in order to fulfill their IR requirement.
   Have you heard of this requirement before?
   ○ Yes
   ○ No

12) Where did you initially learn about this IR requirement (choose all that apply)?
   ○ The program web site
   ○ The program director
   ○ The Graduate School web site
   ○ One of my classmates told me about it
   ○ One of my professors told me about it
   ○ Other _____

13) What questions do you have about this requirement?

14) What steps can the program take to do a better job of communicating the IR requirement to its students?

15) What other thoughts do you have about IR?

Julie Watts

APPENDIX D

Advisory Board Member Survey

1) How many years have you served as a member of the Advisory Board?
   - ○ 2 years or less
   - ○ 3-5 years
   - ○ 6+ years
   - ○ Not sure

The program is committed to making the independent research (IR) experience as beneficial to students as possible This survey is meant to collect information concerning your thoughts about IR and its place in the program curriculum.

For their IR projects, many students conduct research about a communication problem or issue at their workplace. Projects have ranged from investigating how to streamline and update a document workflow, a proposal to develop social media communication strategies for an organization, and how to better engage and communicate with virtual work groups.

2) What are the **benefits** for your workplace (or workplaces in general) for supporting such IR?

3) What are the **challenges** for your workplace (or workplaces in general) for supporting such IR?

A recent survey (Meloncon, 2009) showed that only 11% of all master's level graduate programs in technical and professional communication require an IR capstone like the one our program requires.

4) What are your thoughts about the **viability** of the IR requirement, especially in terms of student's employability and promotability?

5) What other thoughts would you like to share about the IR experience?

APPENDIX E

Focus Group Questions

1. Independent Research (IR) is typically a one-to-one advisement experience with the student—very unlike teaching a class of students. Given this, what parameters do you set up with students when you begin advising their IR?

2. What skills or behaviors do you believe set up students for success in completing their IR projects?

3. Are there particular research skills in general that students lack when they come to you for their IR? If so, what are they?

4. What are your top one or two best practices for effectively engaging students in IR?

FOSTERING INDUSTRY CONNECTIONS

5. Several students have conducted their IR project about a communication-related problem or issue at their workplace. If you have advised a project like this, what are the benefits and challenges of having students conduct this type of workplace-based IR?

6. What are the characteristics of an acceptable field project paper? An acceptable thesis paper?

7. A recent survey (Meloncon, 2009) showed that only 11% of all master's level graduate programs in technical and professional communication require an IR capstone like the one our program requires. What are your thoughts about the viability of the IR requirement, especially given our program objectives (four of the 10 concern research)?

8. Do you have anything else that you'd like to add?

Books Reviewed in This Issue

Bagels, Bumf, and Busses: A Day in the Life of the English Language

If you've ever done historical or linguistic research, you've come across the *Oxford English Dictionary* (OED). This ponderous tome is filled with histories of English words, so you can learn how a common word used today arose from old French and first made its appearance in English in the 1680s. Now, if you've ever wished, "If only the OED were organized categorically instead of alphabetically," then your wish has been granted in the form of *Bagels, Bumf, and Busses: A Day in the Life of the English Language*.

In *Bagels, Bumf, and Busses*, Simon Horobin recreates a typical day's journey, from awakening, to work, including eating and drinking and sports, and then retiring for the evening. Each section describes what you might come across or do during that themed time, and then explains the word's origin. Frequently, that entails not only explaining the word's history, but then explaining the history of the words used in the explanation, along with related words. Consequently, it takes a good deal of reading to learn all the terms for getting dressed for work, eating breakfast, and departing on your commute (which first entered U.S. English in the 1960s and is a shortening of *commutation ticket*, from Latin *com* "altogether" and *mutare* "to change," and was a season travel ticket in which the daily charge was commuted into a single payment). In this style, each aspect of your everyday life is explained.

While each piece of word trivia (from *trivium*, meaning three ways—grammar, rhetoric, and logic) may be interesting, attempting to digest the book by reading it cover to cover may prove tedious. A combination of the content and extremely small typeface is a reading challenge. Fortunately, an index is included so you can easily research your desired word and learn its history, such as the titular *bumf* (the daily paperwork you go through each morning which at one time would have become *bum fodder*, or toilet paper). Using a real life example, if, when you see a colleague wearing a hat known as a *trilby*, you gain joy in the knowledge that it was named for the title charac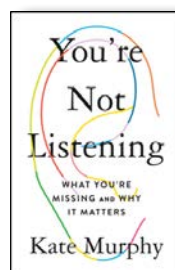ter in a novel by George du Maurier, then *Bagels, Bumf, and Busses* is for you. Amateur etymologists will rejoice and enjoy this book; entomologists not as much.

Timothy Esposito

Timothy Esposito is an STC Fellow with over 20 years of technical communication experience. He is the past president of the STC Philadelphia Metro Chapter. Before becoming president, Timothy was chapter vice president, treasurer, webmaster, and scholarship manager.

You're Not Listening: What You're Missing and Why It Matters

In *You're Not Listening: What You're Missing and Why It Matters*, Kate Murphy shares interesting interviews she had with a CIA interrogator, a Nobel Prize winner, a bishop, a focus group moderator, and an improv instructor (among others) during her research. Each offers insight into various aspects of how we do or don't listen when someone is talking. While Murphy can highlight what you are missing when you're not listening, she is less concrete about why it matters. Still, the book is worth the read and provides food for thought if you want to practice being a better listener.

Throughout 17 chapters, Murphy hits on a variety of situations that affect our ability (or willingness) to listen. Chapter 4's subtitle is "Assumptions as Earplugs," and her interviewee said that people in long-term relationships feel unheard and misunderstood because people lose their curiosity for each other; they are convinced they know each other better than they actually do. This is the kind of eureka moment that makes this book an interesting read.

The book's chapters are independent of each other with little crossover from one to the next; however, you can make connections in your own mind as you ruminate on the content.

In Chapter 8, Murphy identifies qualitative research consultants as those who were hired to listen on behalf of businesses, government agencies, and political candidates. Today, the trend is to use online analytics and social media monitoring. In Chapter 13, we learn that extensive

research has been done about making sense of auditory information, yet there is little understanding of how we listen and connect during conversations. It's no wonder that the digital world of bits, bytes, and character limits affects our ability to focus and listen in face-to-face interactions with actual humans.

Murphy references studies on the synching of brain waves, and how people understand and internalize what another is saying. These are ways that we find friends (and partners), and advance ideas. When these connections are missing, we can feel isolated and empty, so we tend to reach for our phones and "connect" via social media, lose ourselves in music or podcasts, or binge-watching television shows. Still, no matter how much virtual interacting we do, "listening, more than any other activity, plugs [us] into life" (p. 23).

This quote comes from the Introduction, but it is a good question to ponder when finished reading, "When was the last time you listened to someone? *Really* listened, without thinking about what you wanted to say next, glancing down at your phone, or jumping in to offer your opinion?" (p. 1).

Michelle Gardner
Michelle Gardner, CPTC, is an STC member and a technical writer for Aumentum Technologies. She has a bachelor's in Journalism: Public Relations from California State University, Long Beach, and a master's in Computer Resources and Information Management from Webster University.

Storyville!: An Illustrated Guide to Writing Fiction

John Dufresne. 2020. W.W. Norton & Company. [ISBN 978-0-393-43918-2. 276 pages. US$21.95 (softcover, advanced galley-proof).]
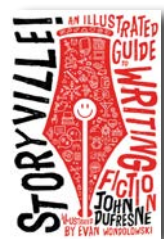
You may ask whether a technical communicator can benefit from a book on how to write fiction. The book's title *Storyville!: An Illustrated Guide to Writing Fiction* is what drew me in. Everywhere today people are encouraged to write their stories, speak their stories, sell their stories. If you haven't yet been tasked with a similar request to tell your company's story on a blog or in a newsletter, you'll likely be asked to soon.

What should you write? You might think of copy for an About page on the corporate website. You would include the CEO's bio and high-quality photos of the production facility for your company or a store front location. However, none of that is fiction. Technical communicators think and write about facts. So, what could the subtitle, "Writing for Fiction" offer, if anything, to a technical community?

Have you ever considered what it might have been like when your CEO created the original concept, looked for funding, and hired a few employees? How long was it before the idea took off and drew the notice of a dedicated audience? And just who belongs to that audience? Do members of your community pipe up online if the company opens or closes a location, or discontinues a product that's been in the lineup for over a decade? Is there a story somewhere in there that others would appreciate knowing? Is there a tale engaging enough to create a fresh marketing strategy around, or even material for a book?

Technical communicators should be impressed by the *Storyville!*'s layout of topics, including how-to steps both in words and illustrations. Thanks to John Dufresne and Evan Wondolowski, the illustrator, graphics and text are richly married in this book. Clever illustrations spark interest in the characters who populate the author's sample stories. Your story's characters should do the same. There are other actors of equal importance to the tale: a chemist who discovered surprising uses for a compound and an investor who backed the operation with 100% belief in the company philosophy.

There is no story without a plot line. Should the company story start when the CEO was born? Is there any reason a reader would care about that? Your story requires a specific beginning that launches the plot. You could borrow a plot from Shakespeare or, less likely, Stephen King. Don't forget an inspirational end that brings all full circle. Though you've heard the company story for so long that you might be bored with it, your audience will not be. Reading *Storyville! An Illustrated Guide to Writing Fiction*, with all the author's positive energy, will fix that attitude quickly.

Another aspect that will attract any writer, especially a technical communicator, is Dufresne's creativity which shines across every one of the 276 pages. I've often wondered what about the source of great enthusiasm and clever ideas, when my gift is the ability to research well, organize, and instruct. Maybe it is time for me to

consider adding a second title to my writer skills cap: Story Writer.

Donna Ford
Donna Ford has been an STC member and a technical writer in the hardware, software, and government healthcare industries. She holds an Information Design certificate from Bentley College. Donna is an author who also reviews books online for the US Review of Books.

Writing Is Designing: Words and the User Experience

Michael J. Metts and Andy Welfle. 2020. Rosenfeld Media LLC. [ISBN 978-1-933820-66-8. 186 pages, including index. US$39.99 (softcover).]

From the moment I saw the cover of *Writing Is Designing: Words and the User Experience*, I was enamored. The cover is modeled after a No. 2 pencil, which prompted me to read about the authors. I learned that Michael J. Metts and Andy Welfle teach a workshop together called "Writing Is Designing: The Fundamentals of UX Writing." In addition, Welfle is a host on "The Erasable Podcast" about wooden pencils. Before I even opened the cover, I knew this book was written by two people that are passionate about words and the impact of those words.

This book is filled with information about how words create a user's experience, including strategy, voice, tone, and more. These concepts are broken out in eight chapters. But what I found most interesting was in Chapter 6 about voice, where the authors share the principles they used to create this book's voice. At the end of the section, they ask, "How did we do?" (p. 116). While it was a rhetorical question, I thought it offered a unique way for me evaluate this book. According to them, the voice principles they used are (pp. 115–116):

- Instructional, but not dumbed down
- Conversational, but not overly familiar
- Confident, but not a know-it-all
- Passionate, but not theatrical
- Pragmatic, but not prescriptive
- Entertaining, but not goofy

I found *Writing Is Designing* to be all these things, some more than others. As I already mentioned, the authors are clearly passionate about words. In addition, they are conversational and entertaining in making this book very accessible and relatable. Throughout the book, I often found myself smiling or nodding at the little anecdotes shared by Metts and Welfle.

With that said, there were two principles that I felt were lacking in the book. In particular, I found this book to be informational rather than instructional. Although this may read like I'm being too rigid with the word choice, I think it's an important distinction. This book served as a starting point for understanding key concepts, pointing me to sources I should investigate further. I was left with a list of names, other books, and concepts that I need to research. I find this to be a strength of the book; they pull multiple pieces of information together into a coherent argument for the importance of words. But I didn't feel like I was given a clear call to action, which I believe is a key part of instruction.

If you are passionate about words and their effect, you'll find a kindred voice in *Writing Is Designing*. The book ends reminding the reader that we can improve our users' experience because we work with words and therefore have the capacity to make a difference.

Sara Buchanan
Sara Buchanan is an STC member and a content strategist at LCS in Cincinnati, OH. In her free time, she's an avid reader, and enjoys cooking and doting on her cats, Buffy and Spike.

The Fundamentals of Graphic Design

Gavin Ambrose, Paul Harris, and Nigel Ball. 2020. 2nd ed. Bloomsbury Visual Arts. [ISBN 978-1-4742-6997-1. 192 pages, including index. US$36.95 (softcover).]

The *Fundamentals of Graphic Design* delivers a comprehensive, cleverly designed overview of graphic design for a student or novice. Experts in the field may not gain new knowledge, but they will appreciate the examples coupled with each description and the book's layout. Each of the six chapters focuses on an important aspect of the field from design as a discipline in Chapter 1 through the production process in the last chapter.

Like a well-designed branding campaign, the book appears polished and well-thought out; it practices the guidance it teaches. Starting with the table of contents,

each section breaks into clearly defined and manageable sections. The chapters include footer descriptions like website breadcrumbs to shepherd the reader between topics. In Chapter 2, the authors explain "the grid," which is "a template or guide used for positioning and organizing" (p. 58). Template examples appear on the page and if you step back, you notice the whole book follows grids like those in the examples. This became an enjoyable treasure hunt–reading a description, then trying to find the guidance in practice in the book. From fonts to print finishing, the book kept reinforcing its teachings.

The publisher promised this second edition included updates relating to digital media. Rather than focus on digital updates, the authors threaded their digital advice throughout each section as they felt it applicable. They addressed some of these updates with information about delivering content in various formats and reminded readers to think about how their audiences would see their work (print versus screen, etc.). Also, some topics included successful, timely online designs. For example, Chapter 5's "Procuring Work" section provided notable self-promotion websites meant to inspire students and new designers in need of identifying and conveying their own brand.

The authors caution against thinking of graphic design as a trade. "It is more useful to look at the underlying approach to design that a graphic designer takes in order to understand his or her role in the print and digital production process" (p. 12). The *Fundamentals of Graphic Design* dissects this underlying approach into several foundational topics. The writing is easy to understand and includes supporting examples as well as seasoned advice. But its design, examples, and ease in referencing other sources of inspiration make it worthy of any designer's library.

Stephanie Saylor

Stephanie Saylor is a senior technical writer and outreach coordinator at CACI. She received her master's degree in digital communication from Johns Hopkins University.

Writing and Designing Manuals and Warnings
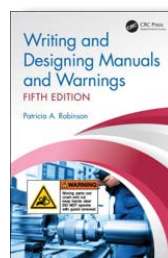
Writing and Designing Manuals and Warnings is intended as a reference for technical writers, marketing directors, product safety managers, and anyone involved with or interested in manuals, manufacturing, and safety. This book has been the authoritative resource in instructional writing and manual design since its first published edition in 1984. This fifth edition divided into four sections brings many needed updates to this venerable text.

Product Safety in the 21st Century. Chapters 1 and 2 explain why companies develop manuals and why consumers need them, the evolving ideas about what products are and how we communicate about them, how to identify audiences and conduct hazard analyses, and navigating the proliferation of safety and liability standards around the world.

The Making of a Manual. Chapters 3–7 describe how manuals are designed and written, running the gambit from writing clearly and concisely to the meaningful use of photos, illustrations, and diagrams. Chapter 7 describes how different types of manuals may differ in terms of organization and language.

You Have Been Warned. Chapters 8 and 9 discuss the fundamentals of products-liability law, the parts of warnings and risk messages, and warning label standards.

Making It Work in the Real World. Chapter 10 describes the working lives of the people who develop manuals, their teams, the conditions in which project deadlines are determined, and organizational politics. Chapter 11 describes building a products liability team and illustrates a real-life situation in the team developing and implementing an integrated product safety plan.

Besides updated examples, the fifth edition includes some new topics. Chapter 1 opens with new information about how the definition of product has expanded to include instructions, marketing materials, and warning labels (this calls to mind the wide net cast by the user experience discipline). Chapter 1 also adds new material about the Internet of things, voice-activated devices, and augmented reality. Chapter 2 includes new discussions about consumer expectations

for product safety and discusses how each of us balance risk versus utility as we use various products. For example, chainsaws have unguarded teeth, can kick back, and create gas emissions; but, despite these risks, they are useful tools. Chapter 8 expands the discussion on the reasons products liability cases increasingly focus on failures to warn.

With any book revision, some material is retired—or demoted to a passing mention—and this revision is no exception. The fifth edition no longer includes the section called "How Do I Find…?" which included information about the various tactics the readers use to locate information quickly. Additionally, the sections on managing translation and the challenges of a global economy have been removed. Given how difficult it can be for a new writer to imagine the myriad ways readers navigate manuals and the ever increasing need to write with translation in mind, these sections seem too relevant to cut.

The fifth edition feels less cohesive than previous editions. For example, the first chapter, once a short introduction that explained why companies produced manuals and consumers read them, now also meanders through the topics of technology, globalization, and international regulations. Chapter 2 discusses identifying your audience but then also veers into performing a hazard analysis—a topic that seems better suited for the chapter on warnings. These opening chapters, which were once welcoming, concise introductions to the world of manual writing, now feel overwhelming. This dissolution of cohesive topics is unfortunate for instructors who will now have to assign readings by page number rather than chapters. It's telling that the author's forthcoming seminar outline resembles the fourth edition rather than the fifth.

I've been a fan of *Writing and Designing Manuals and Warnings* for 20 years. It continues to serve as an invaluable resource for understanding how and why manuals are made. The updates to the examples depicted and the situations referenced were needed, but they're not enough to make a compelling case for owners of the fourth edition to upgrade.

Michael Opsteegh

Michael Opsteegh is an STC Associate Fellow and a technical writer in the software and financial services industries since 2004. He is a lecturer in the professional writing program at Cal State Long Beach. Michael holds a master's degree in English and is a Certified Technical Professional Communicator (CPTC).

Storytelling in Design: Defining, Designing, and Selling Multidevice Products

Anna Dahlström. 2019. O'Reilly Media. [ISBN 978-1-491-95942-8. 416 pages, including index. US$49.99 (softcover).]
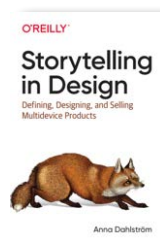
As a child, you probably recall hearing Aesop's legendary fable, *The Hare and the Tortoise*. This fable, like his others, carries with it a moral that is easily recalled because of the interaction of the two animals in the story. As technical communicators, we can use this same approach (writing a short interaction that is memorable because of the scenario) as we write supporting stories for our Agile process, customer presentations, and product documentation.

Anna Dahlström's book, *Storytelling in Design: Defining, Designing, and Selling Multidevice Products* brings a wealth of wisdom from her experience as a Swedish user experience (UX) designer and founder of UX Fika (http://www.uxfika.co/), an online training site for UX and product design. Throughout the book, she draws on her work on a variety of projects from websites and apps to bots to the interface design.

I especially like how she lays the groundwork about storytelling and why it matters. Dahlström then builds on this by introducing Aristotle's three-act structure: Setup, Confrontation, and Resolution. However, traditional storytelling is changing, as society adapts to new developments in technology, new platforms, and devices. Also, we are developing into an on-demand culture where users can get a variety of products and services at a tap or the click of a button.

Dahlström then addresses a variety of topics, such as character development (Chapter 6); storyboarding (Chapter 8); wireframes, designs, and prototypes (Chapter 13); and culminates with presenting your story (Chapter 14). Two unique chapters are Chapter 5, which addresses dramaturgy or the way we tell our story, and Chapter 12, which discusses choose-your-own-adventure (CYOA) stories where the storyline must still deliver no matter where the user lands.

Throughout her book, Dahlström incorporates exercises, which reinforce the content, and she includes references to articles, which are linked. My favorite article reference is "Story Structures—How to make your messages work" (https://oreil.ly/xiHml, p.250), which spotlights Kurt Vonnegut's famous shapes of stories. Vonnegut is well known for his thesis work and

the link to a YouTube video of a segment from one of his presentations is insightful.

I have two minor frustrations with this book. The Storytelling in Design website mentioned by Dahlström in the Preface (p. xviii) is not available at this time. This is likely because her book was published just a few weeks before my receiving my review copy. Also, the link to the interactive film *Black Mirror: Bandersnatch* on Netflix (p. 13) did not work. It appears Netflix either changed the URL or made it inactive.

Despite these temporary shortcomings, you will find *Storytelling in Design* to be a great resource to help you improve your communication to your audience about your product, whether your product uses a desktop computer, a mobile device, or video.

Rhonda Lunemann
Rhonda Lunemann is an STC senior member and a technical writer with Siemens Digital Industry Software. She serves on the STC Twin Cities chapter's Program Committee and is a member of the MN (Minnesota) Bot Makers.

Teams Unleashed: How to Release the Power and Human Potential of Work Teams

Phillip Sandahl and Alexis Phillips. 2019. Nicholas Brealey Publishing. [ISBN 978-1-529-33704-4. 246 pages, including index. US$29.99 (softcover).]
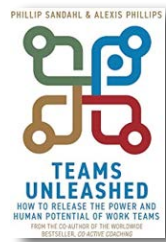
Teams Unleashed: How to Release the Power and Human Potential of Work Teams provides an excellent overview of the prevailing theories on team dynamics, as well as practical steps to improve team and individual performance.

The authors present a new team-effectiveness model based on attributes that they break into two dimensions—one for productivity and one for collaboration. There are seven productivity attributes and seven "positivity" attributes that, when cultivated, lead to high-productivity, high-positivity teams.

The keys to productivity and collaboration are clearly documented. These keys are an excellent guide for people who are new to working on teams or are new to emotional intelligence theory. For example, trust is a key attribute for collaboration, and it allows for a sense of safety among the group. Mirroring—or making similar gestures and comments of your teammate—increases trust through familiarity.

Communication is another attribute to effective collaboration. Technical communicators excel in this area but might be reminded of the importance for working in teams. Communication should be timely, relevant, sufficient, and responsible, even with your teammates.

Communication and trust are invaluable for conflict resolution as well. Besides taking on conflict before it gets too entrenched, you must be committed to resolving it, look for areas on alignment, listen for understanding varying points of view, and search for solutions or actions.

The discussion on the attribute of diversity is one of my favorite areas of the book: "The [successful] team is open-minded and values differences in ideas, backgrounds, perspectives, personalities, approaches, and lifestyles" (p. 57). Simply including diverse people, however, does not make a great team. Members must feel included. They need to feel both unique in their perspective and have a sense of belonging.

The bulk of *Teams Unleashed* is dedicated to team coaches. Defined as the person whose primary responsibility is to observe and ask questions, rather than advocate or make recommendations, this role is not that of a consultant or team lead. The team coach is someone dedicated to coaching a team and must learn the skills necessary. Because team coaching is different than individual coaching, the authors provide principals for team coaching and then outline how to prepare to become a team coach. Finally, the book steps through the coaching process, including sample dialogues.

Although the information can be valuable for team members and leaders alike, this book would have benefited from drawing more conclusions for the average reader rather than focusing so much on a role most team members won't find themselves in.

Wendy Barnhart Ross
Wendy Barnhart Ross is an STC Senior Member, a former STC Rochester chapter president, and supports the Society with diversity and inclusion initiatives. With more than 20 years of technical communication experience, she is a project manager leading technical teams and a blog writer.

Mag Men: Fifty Years of Making Magazines

Walter Bernard and Milton Glaser. 2019. Columbia University Press. [ISBN 978-0-231-19180-7. 288 pages, including index. US $34.95 (hardcover).]

Walter Bernard and Milton Glaser have had long, successful careers as magazine designers, with their contributions having made a significant impact on its history. For over fifty years, they have designed and redesigned some of big names in the industry including *New York*, *Time*, *Atlantic Monthly*, and *Fortune*, but they have also taken on smaller, less well-known projects like *Audience*, *Paris Match*, *Alma*, and the *New York Review of Books*. Some are unknown because they never made it off the ground. *Mag Men: Fifty Years of Making Magazines* tells the stories behind the designs and those who contributed to their success.

The book is divided into three chapters, with the first chapter focusing on *New York Magazine* and Bernard's and Glaser's first partnership. Chapter 2 examines their work separately after they both left *New York Magazine*. Finally, Chapter 3 brings Bernard and Glaser back together as WBMG (their initials). *Mag Men* also provides a unique look at history during this period with the inclusion of callouts that report historical events from the assassination of Martin Luther King, Jr. in 1968, the same year Glaser, Bernard and their team started *New York Magazine*, to President Barack Obama's endorsement of gay marriage in 2012 with recent projects, including the redesign of *The Nation*.

This book is also significant in that it highlights the work from various contributors to the magazines over the years including illustrators, photographers, writers, and editors, acknowledging the collaborative effort it takes to make a successful magazine, rather than implying that the success should be attributed to a single design hero toiling away on their own. Each topic includes information and contributor bios about those who helped make that story a success, or in some cases, a failure. Contributor quotes support the content reflecting on the events and their work. Contributor profiles are also included who have since passed, acknowledging the impact of their work. Lastly, there is a special section on working with women, but throughout the book there is a sense that Bernard and Glaser were never stuck on gender and race, and instead valued contributors for their work, making them ahead of their time fifty years ago.

Mag Men is an entertaining read and will appeal to a variety of readers, with its unique perspective on history, details on designing and redesigning magazines, as well as the successes and pitfalls encountered along the way. Insights are provided on everything from layouts to logos, when to use illustrations versus photography, and when to have a backup plan. The story behind the many adjustments to the *New York Magazine* logo over the years was particularly fun, with insight provided by Michael Bierut, who led in the 1994 redesign by changing out the previous typeface Bookman Swash, which he found to be "uniquely ugly" only to observe recently that his mindset had changed; now he sees the typeface and thinks "it looks great. Ugly, but great" (p. 19).

Amanda Horton

Amanda Horton holds an MFA in Design and currently teaches graduate and undergraduate courses at the University of Central Oklahoma (UCO) in the areas of design history, theory, and criticism. She is also the director of the Design History Minor at UCO.

The Oxford Handbook of English Grammar

Bas Aarts, Jill Bowie, and Gergana Popova, eds. 2020. Oxford University Press. [ISBN 978-0-19-875510-4. 828 pages, including indexes. US$155.00 (hardcover).]

In *The Oxford Handbook of English Grammar*, editors Bas Aarts, Jill Bowie, and Gergana Popova provide a wide-ranging overview of contemporary scholarly discussions in the field of English grammar. Technical communicators should note, however, that "This handbook is not…intended to be a grammar of English;" rather, it "provide[s] an authoritative, critical survey of current research and knowledge in the field of English grammar" (p. xxiii). While the book contains much that would be of interest to all technical communicators, such as the discussion of compounds (Chapter 13), regional varieties in English (Chapter 28), and global variation [of grammar] in the anglophone world (Chapter 29), the practical information is couched within field-specific jargon that would likely make it difficult to

parse for readers who are not professional grammarians and linguists.

The book comprises 31 chapters by individual authors (nearly all of whom are linguistics professors) that are separated into five parts. Part I: Grammar Writing and Methodology contains a brief history of the writing of important English grammarians such as Noam Chomsky and Randolph Quirk, followed by methodological issues in contemporary grammar. Part II: Approaches to English Grammar provides readers with several different theoretical approaches (what the editors call "frameworks") to grammar studies, such as generative approaches (Chapter 8) and constructional approaches (Chapter 6). Part III: Subdomains of Grammar further elaborates on the frameworks presented in Part II, showing how the approaches function in different subdomains of grammar, such as clause structure, complements, and adjuncts (Chapter 17). Part IV: Grammar and Other Fields of Enquiry [sic] discusses the relationship between grammar and other fields, such as lexis (Chapter 23), phonology (Chapter 24), meaning (Chapter 25), and discourse (Chapter 26). Part V: Grammatical Variation and Change looks at how English grammar has changed (Chapter 27), varies in different regions (Chapter 28) and around the globe (Chapter 29), and how it varies in different genres (Chapter 30) and literary texts (Chapter 31).

While technical communicators will likely find the book to be too esoteric for everyday use, those who are looking for a concise yet exhaustive dive into the scholarly discourse surrounding English grammar and linguistics would be hard-pressed to find a better, more thorough introduction to the field.

Dylan Schrader
Dylan Schrader is a proposal developer at the University of Alabama in Huntsville, where he also earned an MA in Professional Communication.

Designing Interfaces: Patterns for Effective Interface Design
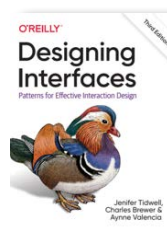
The first thing you notice when you thumb through the third edition of *Designing Interfaces: Patterns for Effective Interaction Design* is how lavishly illustrated the volume is with examples from applications and webpages. All 600-plus pages are printed in vibrant color, which arrests your attention and draws you into the minutest details of user interface (UI) design. This edition is fully revised and more well organized than the previous edition, with additional headings that make this edition much easier to reference. Additionally, the examples have been updated to illustrate the most modern design conventions for various interface design concepts.

The first five chapters cover understanding audience and the design and organization of information. Although technical communicators are familiar with these topics, the authors provide a refreshing review from the UI designer's perspective. In the "Designing for People" chapter, the authors describe a variety of methods used to research users' skills, objectives, needs, and attitudes, and they dive into the cognitive patterns people use to complete tasks. The second chapter illustrates the information architecture principles with application interfaces examples. The authors include a help systems section in which they write, "Every well-designed website or application should have some form of help" (p. 111), which many technical communicators will appreciate. In "Getting Around," the authors describe methods of wayfinding and navigation and ways of reducing users' cognitive load. The fourth chapter discusses responsive design and many UI attributes that technical communicators associate with page design, like grids, visual flow, and progressive disclosure. In the final chapter in this section, the authors describe how to use visual design principles to establish hierarchy, grouping, and sequence as well as evoke feelings within users.

From here, *Designing Interfaces* moves away from principles technical communicators use every day and into areas exclusive to interface design. The

sixth chapter discusses the challenges, approaches, and opportunities exclusive to mobile interfaces, including location awareness and tiny screens. "Lists of Things" describes the why lists are an important, but challenging, part of webpages and apps, and the authors illustrate various methods for organizing and displaying list items. "Doing Things" describes the ways in which users interact with interfaces using controls and gestures. Even if you use apps every day, this chapter articulates the ways you may not have noticed you interact with apps. "Showing Complex Data" outlines ways data visualization is difficult to do well and outlines the various patterns users use to seek and filter information. The final chapter in this section is "Getting Input from Users," which is not to be confused with getting feedback from users—that's in chapter one, which describes how to design forms.

The final two chapters discuss design systems and evolving spaces and technologies behind interfaces.

Designing Interfaces is well written and thoughtfully executed. Whether you're a user experience designer or a technical writer who documents software, this book is a valuable and beautiful resource for understanding the ways in which software helps or hinders humans.

Michael Opsteegh
Michael Opsteegh is an STC Associate Fellow and a technical writer in the software and financial services industries since 2004. He is a lecturer in the professional writing program at Cal State Long Beach. Michael holds a master's degree in English and is a Certified Technical Professional Communicator (CPTC).

Leading in a Culture of Change
Michael Fullan. 2020. 2nd ed. Jossey-Bass. [ISBN 978-1-119-59584-7. 180 pages, including index. US$29.95 (hardcover).]

Author Michael Fullan is an authority on educational reform, but his ideas can apply to all kinds of organizations, as explained in *Leading in a Culture of Change*. One of Fullan's core ideas is to help achieve the moral purpose of all children learning. This idea appears in his book and can extend to helping people achieve any morally grounded purpose through effective leadership for change in any kind of organization.

Fullan lists five change leadership components. Besides moral leadership, the components are understanding change, building relationships, creating and sharing knowledge, and creating coherence. Fullan argues that a leader can master these components, and, in often difficult conditions, that leader can then mobilize others to accomplish shared goals that are worth achieving as the leader will point out.

Leading in a Culture of Change is based on the idea that change is both inevitable and essential in our modern world. Change can foster creative solutions and innovation plus prevent stagnation. Challenges that come with change can include disruptions due to new technologies and shifting market dynamics. To be an effective leader, one must understand these dynamics and complexities of the process of change plus have a focus on a moral, worthwhile goal.

I was struck as I read this book that one of Fullan's main ideas is that an effective leader is one who considers that groups should focus on achieving a right and moral goal and work together to do this, which in my mind is an approach leaders could and should use to be effective. Fullan does note, "There is a lot more to moral purpose than moral purpose. It is not a state; it is a dynamic process" (p. 37).

Jeanette Evans
Jeanette Evans is an STC Associate Fellow; active in the Ohio STC community, currently serving on the newsletter committee; and is co-author of an Intercom column on emerging technologies in education. She holds an MS in technical communication management from Mercer University.

Voice and Tone Strategy: Connecting with People through Content
John Caldwell. 2020. XML Press. [ISBN 978-1-937434-68-7. 120 pages, including index. US$24.95 (softcover).]
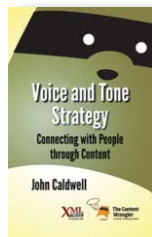
Voice and Tone Strategy: Connecting with People through Content is a short book full of practical advice. John Caldwell writes from his experience as lead strategist for products like TurboTax, QuickBooks, and Mint.

He starts by differentiating character, voice, and tone. Character "captures who you are" as a brand. Voice is "the relationship you create with customers" in all the ways

you touch those customers. Tone is "about mood" and emotion (p. 3).

You can modify voice and tone for different situations—Caldwell calls this "flexing"—but you must always be consistent with your product's character (p. 2).

Although Caldwell does not mention it, I'm reminded of the article that Mary Coney and Michaël Steehouder published in *Technical Communication* 20 years ago: "Role Playing on the Web: Guidelines for Designing and Evaluating Personas Online" (August 2000, 327-340). Coney and Steehouder pointed out that "persona" applies not only to the users of a website but also to the "author persona" of the website—its character, voice, and tone.

Caldwell goes beyond the guidelines that Coney and Steehouder gave us by walking us through a framework for developing and using a voice and tone strategy.

In this framework, you start with a goal: What do you want the voice and tone of the product to achieve? For the goal, Caldwell suggests considering the emotional impact you want to have.

Everything you put into the voice and tone framework must serve that goal. Therefore, you want to get input and then "buy in" from key stakeholders, research industry trends so your goal gives you market advantage, align with your organization's vision and other goals, and be aspirational—think beyond the current box.

From the goal, Caldwell takes us through four building blocks:
- Customer needs and desires
- Voice attributes
- Voice principles
- Examples

For each building block, he explains how to gather relevant data, think deeply about the issues, and consolidate and select a useful and usable short list. He also devotes Chapter 6 to "flexing" (modifying) both voice and tone for specific situations.

As writers, we can appreciate how voice and tone influence the messages we send. On page 53, Caldwell gives this example from his work with TurboTax: The old voice said, "TurboTax is as easy as 1, 2, 3." But understanding how vulnerable people feel when dealing with taxes, Caldwell's team changed to a new voice that says, "Taxes are complex. But we'll be by your

side to conquer them together." With that hero story, conversion and retention rates went up.

In the final chapters, Caldwell has excellent suggestions for presenting and rolling out your new voice and tone strategy. Throughout—and especially in this part—he reminds us of the power of emotion and storytelling.

Voice and tone are critical to connecting with your users. Caldwell's book with a specific framework and many examples will help you rethink how to connect most successfully.

Janice (Ginny) Redish
Ginny Redish helps clients and colleagues meet business goals and users' needs through content strategy and plain language. Her book, *Letting Go of the Words – Writing Web Content that Works,* (Elsevier, 2nd ed., 2012) still gets rave reviews. Ginny is an STC Fellow and winner of several STC awards.

Cracking the Digital Ceiling: Women in Computing Around the World

Carol Frieze and Jeria L. Quesenberry, eds. 2020. Cambridge University Press. [ISBN 978-1-108-74007-4. 356 pages, including index. US$29.99 (softcover).]]
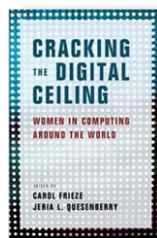
In recent years, a great number of studies have been conducted on "under-representation" of women in various science, technology, engineering, and mathematics (STEM) fields in America, including the fast-developing field of computer science (CS). According to the Bureau of Labor Statistics (2017), in the United States, "women held only 26% jobs" in computer science, compared to "55% women entrepreneurs in the Internet industry in China (PRCSCIO, 2015)" (pp. 2–3). Various factors such as socio-economic backgrounds, religious beliefs, and race were cited as probable causes. *Cracking the Digital Ceiling: Women in Computing Around the World* is a fine addition to this extensive research on the topic, as it further strengthens the case for more women to participate in digital economies.

The book is a definitive, thought-provoking, and extremely well-organized collection of global perspectives carefully curated by experts Carol Frieze and Jeria Quesenberry. The editors collaborated with

close to 30 authors to identify and compile current research that, once more, forcefully challenges the notion that computing is for men only. At the book's forefront is a complex, rich discussion on the role that numerous cultural factors play in determining women's participation in CS in more than 50 countries. As well as the need to change, if slowly, some of the cultural biases, attitudes, and low expectations towards female performance in STEM. The editors identify the term "culture" as "the complex and broad set of relationships, values, attitudes, and behaviors […] that bind a specific community consciously and unconsciously" (p. 7).

Cracking the Digital is organized in four parts: global perspectives, regional perspectives, cultural perspectives from the United States and Europe, and cultural perspectives from Asia-Pacific. To assist in navigating the research, the introduction offers a useful feature, the Chapter overview table, that provides a brief survey for each article, and mentions its main topics. After each research article, one finds a series of discussion questions that address the issues at hand and extend our understanding and thinking about a particular research point. Extensive, up-to-date references contain a wealth of information and provide further clarification on research in each article. In addition, the researchers contributed articles with fascinating and very readable, if somewhat dense, statistics (line graphs, infographics, comparative tables), extensive interviews with female computer scientists and STEM researchers, and fascinating vignettes.

Tetyana Darian
Tetyana Darian has an M.S. in Pure Math and is currently a part-time lecturer in mathematics at Rutgers University Camden.

Rhetorical Machines: Writing, Code, and Computational Ethics

John Jones and Lavinia Hirsu, eds. 2019. The University of Alabama Press. [ISBN 978-0-8173-5954-6. 280 pages, including index. US$34.95 (softcover).]

Rhetorical Machines: Writing, Code, and Computational Ethics is an insightful, multi-disciplinary collection that challenges its readers to consider computational code rhetorically. *Rhetorical Machines* argues—through original essays to "chatbot" (automated

computational conversation agents) transcripts—that the human-machine relationship between computation and rhetoric is visible both socially and culturally. This book invites the reader to analyze and engage with rhetoric by considering different perspectives within our digital culture.

John Jones and Lavinia Hirsu organize the collection in four parts: (1) Emergent Machines, (2) Operational Codes, (3) Ethical Decisions and Protocols, and (4) Responses. Together, these sections cover wide ground, from physical hardware, software, and programming in "Emergent Machines" to the ethical results or consequences associated with software and program design in "Ethical Decisions and Protocols." All four sections provide insight into the visible and invisible effects computation and rhetoric have on each other. Each section also broaches to answer questions about computational communication, including how algorithmic operations relate to representations of race, how user relationships threaten sexual order, and more.

The collection examines rhetoric as an authored machine, focusing on its invisible components and inner workings—human, logistic, material, mathematical, and algorithmic. Jones and Hirsu are not questioning if computation and rhetoric are related to each other but rather how the two operate together. By including original essays from a wide range of perspectives and disciplines, the collection does not define or isolate the relationship between rhetoric and computation, but rather investigates new linkages between computation, community, and rhetoric(s).

There is a certain amount of urgency associated with understanding the relationship between computational and rhetorical machines. This urgency is a call-to-action for readers—"To work with(in) rhetorical machines, rhetoricians and programmers alike need to take on the role of explorers in areas which may often go beyond human understanding, control, or analytical desire" (p. 8). We need to think about the link we have with our machines and listen to what they have to say if we are to become involved in the computational rhetoric defining our communication today.

Rhetorical Machines asks its readers to explore the complex human-machine relationship by looking at the physical, procedural, and software-related aspects of computation. The authors suggest that those computational aspects, along with our rhetorical

understanding of them, are imperative in recognizing our current digital culture.

I enjoy Jones and Hirsu's inclusion of the "chatbot" transcripts (A.L.I.C.E., Mitsuku, and Elbot) to explore deeply the connection between the human mind and machine program. The conversations offer a bit of comedic relief to a subject that might otherwise be heavy for some readers:

> L.&J.: How do you feel about the work that you do?
> A.L.I.C.E.: Try searching the web.
> L.&J.: You are not the web.
> A.L.I.C.E.: You don't know me well enough to say that. (p. 15)

The book's well-organized layout, multi-disciplinary essays, and incorporation of "chatbot" transcripts make it a pleasurable, insightful read.

Lindsay Scott

Lindsay Scott is an STC student member of the Clemson University and North Carolina chapters as well as the Academic and Technical Editing SIGs. She is currently pursuing a master's degree in Writing, Rhetoric, and Media at Clemson University.

Women Can't Paint: Gender, the Glass Ceiling and Values in Contemporary Art

Helen Gørrill. 2020. Bloomsbury Visual Arts. [ISBN 978-1-5013-5903-3. 284 pages, including index. US $35.95 (softcover).]

The title *Women Can't Paint: Glass Ceiling and Values in Contemporary Art* comes from a statement made by Georg Baselitz, a male artist and critic, who, in 2013 stated, "Women don't paint very well, it's a fact" (copyright page). His assertion is based on the idea that women don't pass the market/value test. In other words, their works aren't selling or aren't attaining the same prices as those of male artists, therefore they aren't particularly good artists. Artist, curator, and historian Helen Gørrill was motivated by this statement to revisit Linda Nochlin's 1971 landmark article, "Why Have There Been No Great Women Artists?", to further investigate these ideas. This book specifically addresses the subject of inequality of female painters, as painting has been historically ascribed as a masculine field, though the gender disparities discussed apply to other artistic practices as well.

The contemporary issues addressed in *Women Can't Paint* regarding gender in the artworld are numerous, and readers might be surprised at the range and extent at which these issues still exist. This includes the valuing or devaluing of female artists, gender inequality in museums and art prizes, despite public relations from museums and awarding institutions that emphasizes equality, and issues such as ageism. This book challenges the inherent problems in the system and provides evidence the artworld is not the "progressive and liberal community" many believe it to be.

Women Can't Paint presents facts evidenced by statistical data that a large gender value gap exists in the artworld, employing both qualitative and quantitative research methods. The qualitative approach includes a series of interviews of women and men associated with the artworld, while the quantitative research methods includes data gathered from 1992–94 and 2012–14. The author notes that numbers, or quantitative assessments, are often disregarded by artists, and therefore some readers may disregard a large portion of the content. Yet the numbers do not lie, and Gørrill makes a case for more quantitative studies to be conducted within art fields.

Women Can't Paint is a valuable work emphasizing continued gender disparity for female artists. Gørrill acknowledges this subject area is "provocative and contentious" and many within the system will deny the conclusions presented. Regardless, problems continue, the work of male artists tends to be appraised for what it is, while the work of female artists is generally first regarded in terms of gender. The inclusion of women in museums and art prizes largely appears to be tokenism rather than efforts of true equality. Educational institutions continue to be part of the problem, not the solution. The content of *Women Can't Paint* will shake the foundations of an institution where the glass ceiling is not only firmly in place, but as Gørrill presents, is descending. So, while women are not achieving the same market value as men in painting, the numbers indicate this is part of a larger problem stemming from the devaluing of art by women from the institutions that control the system, not a reflection of the quality of work they produce.

Amanda Horton
Amanda Horton holds an MFA in Design and currently teaches graduate and undergraduate courses at the University of Central Oklahoma (UCO) in the areas of design history, theory, and criticism. She is also the director of the Design History Minor at UCO.

Pencils You Should Know: A History of the Ultimate Writing Utensil in 75 Anecdotes

Caroline Weaver. 2020. Chronicle Books. [ISBN 978-1-4521-7837-0. 168 pages. US$16.95 (hardcover).]
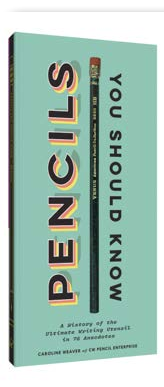
Pencils You Should Know: A History of the Ultimate Writing Utensil in 75 Anecdotes—, written by Caroline Weaver, owner of CW Pencil Enterprise, a New York store that sells pencils—gives her position on, what some might call, a dying industry. While pencils are not at their peak, Weaver is proof that there is still a market for these items.

This book is aesthetically pleasing with all the key components of a "coffee table" book, rife with full-page pictures of various pencils that have been manufactured from the early 1800s all the way to 2017. On the opposite page of each pencil is a paragraph of text explaining how that pencil adds to its collective history.

The "Crayon Velours Pencil" (p. 22), for example, was created by Nicholas-Jacques Conté, a French hot-air-balloon engineer during the Anglo-French war when France didn't have access to quality British graphite. Conté took finely ground mediocre graphite, mixed it with water and powdered clay, and fired it in a kiln. To this day, pencils are still made this way with only minor improvements.

Weaver takes the reader through a vast history of pencils by covering only tidbits of information about anything related to pencils, such as the companies that manufactured them, the functional or aesthetic anomalies, and, sometimes, the famous writers that wrote with them. The "Dart 1172 No. 2 Pencil" (p. 38) best illustrates such tidbits because it exhibited a unique design with an eraser shaped like a dart. As part of a rapidly growing industry, Eberhard Faber Pencil Company could make bold design choices as they were

one of the Big Four, "a term used to describe the four largest pencil companies in the United States" (p. 166).

While the book mostly covers pencils that are no longer in production, there are a few that are still being manufactured—most notably, the "Graphicolor and Editor Pencils" (p. 158), which were manufactured in 2017 by Caran d'Ache and designed by Weaver. Both pencils are half graphite core with the other half being a red core (the Editor) and a pigmented yellow highlighter (the Graphicolor).

While pencils are not designed and manufactured at the same rate they once were, they are still available for the people that want them. If you're someone that swoons over paper and writing utensils, it's safe to say you'll enjoy reading *Pencils You Should Know* and likely learn a thing or two as well.

Sara Buchanan
Sara Buchanan is an STC member and a content strategist at LCS in Cincinnati, OH. In her free time, Sara is an avid reader, and enjoys cooking and doting on her cats, Buffy and Spike.

Dreaming the Graphic Novel: The Novelization of Comics

Paul Williams. Rutgers University Press. [ISBN 978-1-9788-0506-4. 262 pages, including index. US$29.95 (softcover).]

The title of Paul Williams' *Dreaming the Graphic Novel: The Novelization of Comics* succinctly captures the theme: how a "spikey, disjointed process" of contentious debate among creators and readers of comic books during the "long 1970s" (~1964–1980) drove the evolution of a new aesthetic form, the graphic novel (pp. 19, 189). *Dreaming,* with its paradoxical combination of disorganization and direction, is a fitting metaphor for the fragmented pictorial organization of comic books, their images self-contained yet loosely related to each other, implying a unified, longer form narrative, or a kind of "novelization." As the title suggests, the graphic novel as a new, unique literary genre emerged from a fractious period of debate and experimentation.

During the long 1970s, the original comic book audience, children, matured into adults, lost interest in the form, and bought fewer copies. Increased paper

costs and distribution complications squeezed profit margins. And creators and fans disagreed vehemently about whether a new genre was needed and if so what it should be called—"graphic story," "graphic album," "graphic history," and "graphic narrative" were all considered before settling on "graphic novel." The contentiousness of the discussion stemmed from a basic contradiction: whether comics should remain on the margins of culture, authentic in their resistance to institutionalization, or, because of the aesthetic inferiority that implied, seek artistic legitimacy through canonization—the very institutionalization the form sought to avoid in attempting to keep its authenticity and counter-culture posture.

The graphic novel's goal, therefore, was to retain the outsider status of traditional comic books while enhancing its broader institutional, cultural, and aesthetic value. The term "novel" was particularly transformative because it implied seriousness, extended narrative continuity, complex characters, and single-author creation and ownership of content. The term "graphic," in turn, connoted the pictorial energy and rebellious attitude of traditional comics. The graphic novel was not to be read as just "another illustrated nineteenth-century novel," or as just another traditional, but simply longer, comic book (p. 142). It had to establish a unique aesthetic identity.

Richard Corben's *Neverwhere* illustrates these requirements by combining literary techniques associated with classic novels, especially narrative complexity and verisimilitude, with an "airbrush technique" that "made his comics 'realistic'" (p. 142). The innovative pictorial realism and sophisticated, novelistic prose result in a new aesthetic form that turns "two-dimensional lines (a script) into three-dimensional people (the finished art) so the reader doesn't have to" (p. 143).

The graphic novel's advent also meant a different format or "materiality" for the book—hard covers, sewn binding, higher quality paper stock—material signifiers of a book meant to be kept, not read once then discarded. The book's physical permanence suggested the aesthetic seriousness and cultural legitimacy of mainstream fiction and art.

As Williams' detailed scholarship shows, efforts by major creators like Corben, Will Eisner, and Art Spiegelman secured academic and cultural legitimacy for the graphic novel while ensuring, through their newly integrative approach, a differential art recognized for its aesthetic seriousness yet independent of institutional strictures.

Donald R. Riccomini

Donald R. Riccomini is an STC member and a senior lecturer in English at Santa Clara University, where he specializes in teaching engineering and technical communications. He previously spent 23 years in high technology as a technical writer, engineer, and manager in semiconductors, instrumentation, and server development.

Technology and Society: A World History
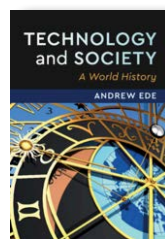
The tempo of change today is dizzying. No sooner do we get accustomed to one technology than it is upstaged by another. No period in history has experienced such a rate of change except perhaps for the first half of the 20th century.

Technology and Society: A World History gives us much to choose from; tracing the role of technology from the beginning of human society—from the stone age to the digital age—and its sometimes surprising effects on virtually every aspect of society: economic, social, and political. Hopefully, greater awareness of these interactions will help us better understand the faster-than-light changes occurring in the digital age we are now living through.

Ede stresses that "technology is a *system*, not a collection of artifacts," and as such, includes forms not based on physical objects: "invisible technologies" such as education. As he says, "Education is one of the most powerful technologies ever created, in part because it trains people to *use* technology" (p. xi).

He discusses the relationship between technology and political systems, pointing out that "Western powers came to dominate international relations in the last 500 years partly because technology gave them an advantage over other groups of people" (p. 6). And, of course, its many unexpected consequences: The technology of printing "may have made mass democracy possible, but democracy was not an inevitable product of printing" (p. 11). Not to speak of the term "industrial revolution" itself that overturned

the economic systems of the countries that embraced it. We even label long swaths of human history by their technologies: the Neolithic Age, Stone Age, the Bronze Age, and even today, by such terms as "industrialized" versus "developing" countries (p. 1).

What Ede calls the second industrial revolution picks up with the introduction of commercial radio in 1920, followed by transatlantic telephone service in 1927; a year when news also appeared on newsreels. Commercial TVs were starting to be manufactured by 1940, but production was delayed by the war. Almost 10 percent of U.S. households had TV sets by 1950; the figure climbed to 92 percent by 1965 (p. 265).

And finally, the digital age, ushered in by the computer. Here Ede stresses that while hardware is important, it was really the software that turned the computer into such a powerful tool: applications for word processing, accounting, and databases that, along with the new computer languages, that helped move computers out of the laboratory and into the worlds of business, education, and home use (p. 276).

His last chapter, The Digital Age, previews topics like robotics and the internet, though he refrains from the ubiquitous and ever-evolving areas of social media and IoT, IT and AI, and the computer's thousand other newly hatching offspring.

Steven Darian

Darian's most recent book is the 2nd revised edition of his *Technique in Nonfiction: The Tools of the Trade, 2020.*

Eternal Impact: Inspire Greatness in Yourself and Others

Troy Nix. 2020. Advantage Media Group. [ISBN 978-1-59932-997-0]. 118 pages. US$14.99 (softcover).]
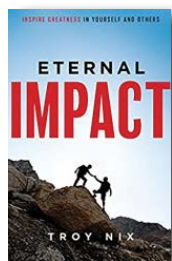
Eternal Impact: Inspire Greatness in Yourself and Others is a self-help book aimed towards gaining leadership skills using self-reflection redirected outward through positive influence. Motivational speaker Troy Nix presents stories in a casual speaking style meant to inspire, with the main message that motivation does not spark change. Instead, it takes small, incremental steps to change one's

attitude and perspective, prior planning, and taking ownership and responsibility of your situation to set a leadership example to others.

While this book is meant to be a "feel good" book to encourage readers to understand what it takes to be more confident leaders, it did not inspire much. Most of the book did not contain any information that was novel, innovative, or inspiring. If anything, this was a difficult book to read while in a pandemic, as it started with the setting of a funeral and continued with many stories about people with cancer, battling drug addictions, and other hardships!

Nix's perspective is understandable in attempting to demonstrate how to turn the negative into something positive, but it is not always relatable. While it makes sense that he relays his stories from his own experiences, those experiences and perspectives are from his point of view as a male in his late fifties who had started his career in the armed forces, then applied some of those life lessons to the rest of his career as the "man as the breadwinner." He also employs several sports metaphors and examples to get his point across. Nix makes references that would only relate to people who are Gen-X or older (and maybe a few older millennials). It is written more as if he was speaking to those who are more like himself than a broader audience.

There are also some issues with some of what Nix suggests, especially with his chapter about "no excuses"—taking ownership as a leader. His concept is that if something on his team fails, it is because he alone failed his team as a leader. He did not seem to ever suggest that team members did not equally take responsibility or ownership for themselves that would cause breakdowns.

The pitch of *Eternal Impact* is that if you follow his methods, your success is guaranteed. After reading this book, applying most of these things will certainly help to change attitudes and promote more success, but it is not a guarantee for success. The book lacked discussions about the balance of work and life, and the balance of perseverance versus burnout, for example, that may have been more helpful as guidance to help implement his methods more successfully. While this book's intention is meant to be inspirational, it is only lackluster at best.

Danielle M. Villegas

Danielle M. Villegas is an STC Associate Fellow and active member of the STC Philadelphia Metro Chapter (PMC). She has also been the Conference and Sponsorship Chairs for STC-PMC's Mid-Atlantic Regional Conference, CONDUIT, for the past four years, as well as having served as chapter president and vice president/programming chair.

Writing an Interactive Story

Pierre Lacombe, Gabriel Féraud, and Clément Rivière. 2020. CRC Press. [ISBN 978-0-367-41031-5. 234 pages, including index. US$49.95 (softcover).]
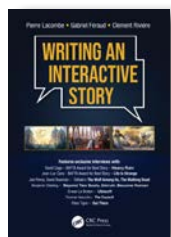
Many people, while growing up, have encountered a classic Choose Your Own Adventure book. In that style of book, the story unfolds differently based on decisions the reader makes. Do you explore that mysterious cave and turn to page 123, or do you go down to the river and turn to page 67? The spiritual successor to such books is the genre of computer games where you make similar decisions to drive a plot within the game. Similarly, tabletop roleplaying games such as "Dungeons and Dragons" use a framework where the people experiencing the game make choices that drive the storyline. That is what is known as an Interactive Story. Creating such content; whether it is for a book, computer game, or roleplaying game; can have a similar workflow. In *Writing an Interactive Story*, three experienced storywriters come together to share their experiences and to teach the reader how to craft their own interactive story.

The three authors, who hail from France, have an excellent understanding of the English language, so you should not be put off by the occasional awkward phrasing. Altogether, the book is well-written and very readable with the authors including brief interviews with other international, award-winning game designers. These excerpts serve to highlight the topics of each chapter, and to add real-world examples and applications to the presented theories. Instruction, background, theory, and nostalgia are well-mixed throughout the book. Brief histories of different story genres are given, such as Choose Your Own Adventures, which will bring a smile to anyone who has enjoyed these in the past. Classic computer games are mentioned and used as examples to illustrate story writing mechanics. The people crafting today's game and book experiences were often inspired by the same games and books that inspired you to read this book, and it is satisfying to apply those common influences towards an interactive product.

Overall, this is a handy resource and a visually appealing book. It contains many illustrations, as well a flow charts demonstrating how to drive story choices through dialogue in a game, actions to take, and characters to develop. Even if you are not creating an interactive story, the authors provide a solid groundwork for developing characters and plots that can be applied to any creative writing. If you are thinking of crafting any such interactive story, be it in a game or a book, *Writing and Interactive Story* will give you plenty of resources to get started. If you were not thinking of making your own adventure story but are now, pick up a copy of this book and turn to page 21.

Timothy Esposito

Timothy Esposito is an STC Fellow, STC Secretary (2020-2022), and a past president of the STC Philadelphia Metro chapter with more than 20 years of technical communication experience. He has served in his chapter as chapter vice president, treasurer, webmaster, and scholarship manager.

Suffrage and the Arts: Visual Culture, Politics and Enterprise

Miranda Garrett and Zoë Thomas, eds. 2020. Bloomsbury Visual Arts. [ISBN 978-1-350-12867-5. 282 pages, including index. US$34.95 (softcover).]

Suffrage and the Arts: Visual Culture, Politics and Enterprise is a collection of 11 essays that share central themes surrounding the suffrage movement in the United Kingdom (UK). Through individual topics, each author investigates the impact visual culture had on the enfranchisement for women in the UK. The topics vary from women's art organizations and their ties to suffrage, the influence and impact of female artists and designers, women-led enterprise, marketing the suffrage movement, visual

representation and symbolism, and even iconoclasm. The collection is divided into four sections including Institutional Politics, Enterprise and Marketing, Paintings on Display, and Representing Suffrage that examines a wide range of visual culture from ephemera to fine art.

Suffrage and the Arts acknowledges the contributions of the Irish and Scottish in the suffrage movement, which have previously been overlooked in traditional historical analysis of the women's suffrage movement in the UK in favor of a London-centric view. The essay "The artistic, social and suffrage networks of Glasgow School of Art's women artists and designers" explores the contributions of women artists in Scotland with author Liz Arthur acknowledging that "Although Charles Rennie Mackintosh was the best-known adherent, women far outnumbered men as active participants in the decorative arts" (p. 60). In "'An arts and crafts society, working for the enfranchisement of women': Unpicking the political threads of the Suffrage Atelier, 1909–1914", author Tara Morton also digs into the diversity of historical analysis of those underrepresented in history. Morton states, "the Suffrage Atelier was somewhat unique in functioning as both a commercial and a political arts and crafts enterprise" (p. 69) but points out that many of the women within the Atelier are not well documented, especially the amateur and working-class artists who collaborated to develop banners and other items for the suffrage movement.

While the book's main theme centers around arts and enfranchisement for women, several essays acknowledge male support and involvement in the suffrage movement as shown in the essay, "The spectacle of masculinity: Men and the visual culture of the suffrage campaign", that focuses on how men who supported suffrage were represented by the opposition as emasculated, effeminate, or hysterical. The "hysterical man" representation can be a particular insult since it was largely viewed that only women lacked the power to control their emotions, which inherently made them weak (p. 221).

Suffrage and the Arts examines the power of visual representation and proves that both sides of the movement understood its value. Suffragettes were encouraged to be well-dressed and present themselves as poised to counteract the unflattering cartoons and propaganda from the opposition. Leaders of the suffrage movement also made use of propaganda by publishing images of female prisoners being force fed to illicit sympathy from viewers. Suffrage supporters were unified under a variety of symbols and distinct color palettes that successfully marketed and branded the movement. The wide range of topics covered within *Suffrage and the Arts* makes for an interesting collection that has something for anyone interested in learning more about this important historical era.

Amanda Horton

Amanda Horton holds an MFA in Design and currently teaches graduate and undergraduate courses at the University of Central Oklahoma (UCO) in the areas of design history, theory, and criticism. She is also the director of the Design History Minor at UCO.

Review of Five Books on Higher Education

By Diane Martinez

INTRODUCTION

My goal in putting this series together was to read about the current conversations regarding higher education, starting with a broad stroke of the university and narrowing down to the classroom. I wanted to see what talking points these books had in common, if any, and what are some possible ways forward. One common theme I found is that the economic model of rankings and competition has degraded creativity and innovation in research, teaching, and service at universities. It also became clear that conversations about the current state and future of higher education around the world is a crucial conversation for all citizens, not just for academics, because creativity and innovation are the cornerstones of progress for any civilization.

GENEROUS THINKING: A RADICAL APPROACH TO SAVING THE UNIVERSITY
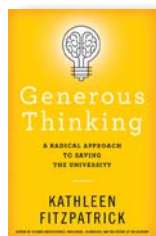
Generous Thinking: A Radical Approach to Saving the University is a timely book, given current debates regarding higher education in the United States. After World War II, the university was generally thought of as a public good that provided benefits to greater society; however, in recent decades, obtaining a college degree has been considered a private privilege, endeavor, and responsibility. Consequently, the public has become suspicious and possibly resentful about supporting an institution that is no longer seen as a public service but rather a place for only certain individuals to receive personal benefit. Kathleen Fitzpatrick connects this trend of the privatization of higher education with a lack of communication and engagement with the publics that universities are meant to serve. Her claim is that universities, and the people that work in and around them, need to shift their thinking regarding the work they do and who they ultimately serve from one of competitiveness and

individuality to public service. Such change, Fitzpatrick claims, can occur through "generous thinking."

Generous thinking is "a mode of engagement that emphasizes listening over speaking, community over individualism, [and] collaboration over competition" (p. 4). Thus, Fitzpatrick sets out to explain the concept of generosity and how it applies to building a better relationship between the university and publics. In particular, she spends two chapters discussing how faculty can engage and inform the public about their research and work by reading together. Given that the public funds most state universities, she makes the case that the research and work that goes on at a university should not be hidden from the public through publication in only obscure venues, such as academic journals, which are not intended for public consumption. She explains that faculty, for instance, can make public appearances, but they should also make their work publicly accessible. Publicly accessible, to Fitzpatrick, means posting work in public spaces, using open source publication processes, writing for public audiences, and seeking public commentary, as she did with the original manuscript of her book. Her main argument is that the university sets itself up as being superior to those outside the borders of academia, but the public has plenty to contribute to the work taking place on campuses. Such participation and engagement would clearly demonstrate how the university is a public good, which would create community linkages between the university and the public, and, consequently, once more garner public support.

Higher education is in a crisis, most especially the arts and humanities. Federal mandates force universities into the role of being a means for only workplace preparation, and such demands have changed the university environment and what it means to have a college education. Thus, a book that addresses such critical issues in our society is important. The problem with *Generous Thinking*, however, is that Fitzpatrick offers too little. In the Introduction, she states "I am asking us to take a closer look at the ways that we

Review of Five Books on Higher Education

connect with a range of broader publics" (p. 4). The key here is the word, "look," which is basically all she does. What she offers is a scholarly piece of writing on the abstract concepts of community, connection, commitment, and engagement. In fact, the writing comes off as a composite of so many sources with long-winded explanations of their significance to her overall argument that trying to track down the main ideas for each chapter is a constant hunt. And she offers no real solutions. Fitzpatrick ends the book with the obvious question: "'okay, so what do we *do*?'…a question that is going to require more minds than mine to answer" (p. 236). The book is basically 'here's what we all have to think about,' but anyone who is mildly aware of mainstream media coverage on higher education would already be asking the same questions she does. The idea of generous thinking becomes just a term Fitzpatrick uses to say 'we have to do better to connect with the public,' which, yes, is true, but that same argument could have been made just as well in probably less than half the length of the book.

THE CREATIVE UNIVERSITY: CONTEMPORARY RESPONSES TO THE CHANGING ROLE OF THE UNIVERSITY
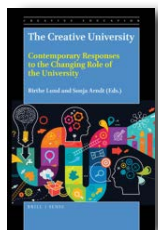
The Creative University: Contemporary Responses to the Changing Role of the University is a selection of papers from the 2016 Creative University Conference at Aalborg University, Denmark, which "represent a range of responses to the question: What is a 'creative university'?" (p. 1). The creative university is difficult to pin down in that it is a concept, a "response *to societal changes*" (p. 1) that calls for new pedagogies to "develop students' innovative and creative thinking, where students as well as teachers are expected to break with habitual actions and thoughts" (p. 2). This concept presents a tall order for higher education due to the multitude of philosophical questions it raises, many that are addressed in this book. Thus, it is a beneficial book for educators, graduate students, and employers across disciplines.

Like the concerns raised in *Generous Thinking*, contributors to *The Creative University* address pressing issues related to universities increasing their interaction with the public, moving away from standardized performance metrics and fostering creativity through

innovative instruction, for instance. They present concrete examples of creative and innovative pedagogy, as well as discuss reasons why higher education must move away from standardization that relies on mere economics and metrics to motivate knowledge production and knowledge exchange. For instance, the chapter "The Importance of Imagination in Educational Creativity When Fostering Democracy and Participation in Social Change" describes how students responded and reimagined an energy solution when a nuclear power plant was proposed in a Danish community. In response to the overall social rejection of the power plant, students and faculty at a Danish Folk High School built the world's largest windmill. The chapter, however, is not only a narrative about how this technological and social feat was accomplished; it discusses the philosophical concepts, such as how creativity is defined, what elements make up a democratic education, and where does student agency fit into these larger concepts.

I don't normally provide a laundry list of topics covered in a book; however, it is worth highlighting the wide range of philosophical concepts and creative and innovative pedagogy readers will encounter in this book, including:

- using practice-based research to produce "*something that requires long hours, intense thought, and considerable technical skill*" (p. 31);
- teaching students to be comfortable with uncertainty and have productive failings;
- exploring whether Bildung has "any relevance in the postmodern world of instrumentalist and pragmatic approaches to education" (p. 53);
- using constructivism to foster innovation and creativity in instruction;
- defying economic narratives where knowledge is judged by its economic impact and moving instruction toward traditional academic values associated with social engagement with citizens;
- presenting a new model university focused on "social entrepreneurship and social inclusion than on market-oriented activities" (p. 150); and
- developing a digital public university that also serves as a public good.

What many contributors point to is that quantity does not equal quality and that, in many ways, "one root cause of the lack of theoretical advance is the academic incentive system; where it has become more important

to be productive than creative" (p. 144). Thus, there is a strong commitment to reimaging the postmodern university that has taken an economic turn and consequently stifled innovative and creative learning, thinking, and actions, the very elements that allow civilization to progress.

LAND-GRANT UNIVERSITIES FOR THE FUTURE: HIGHER EDUCATION FOR THE PUBLIC GOOD

Land-Grant Universities for the Future: Higher Education for the Public Good is based on a survey conducted by Stephen M. Gavazzi and E. Gordon Gee with 27 land-grant university presidents and chancellors who agreed to participate in the study. The survey consisted of four basic questions on the strengths, weaknesses, opportunities, and threats (SWOT) to land-grant universities.

Before launching into their study results, the book begins with a chapter on the historical mission of land-grant universities and the evolution of these universities over the past 150 years. This is an important chapter because the "land-grant mission is not a well-known concept among American citizens" (p. 29), and "there is tremendous variation in how the land-grant mission is expressed across America" (p. 40). The First and Second Morrill Acts, the Hatch Act, and the Smith-Lever Act all played significant roles in defining the core activities of the land-grant university—teaching, research, and service—but there is no set mandate on what it means to engage with the community. In other words, how does the land-grant university serve the very people it was intended to serve?

Probably the most interesting chapter of the book, "Strengths, Weaknesses, Opportunities, Threats" outlines seven themes that emerged from the SWOT analysis study, which are provided below.

1) Concerns about funding declines versus the need to create efficiencies
2) Research prowess versus teaching and service excellence
3) Knowledge for knowledge's sake versus a more applied focus
4) Focus on ranking versus an emphasis on access and affordability
5) Meeting the needs of rural communities versus the needs of a more urbanized America
6) Achieving global reach versus closer-to-home impact
7) Exploring benefits of higher education versus the devaluation of a college diploma (pp. 59–60)

Supported by lengthy quotes from survey responses, the authors explain each theme as it relates to the historical, present, and future of land-grant universities.

Understanding the issues alone is not enough to chart a future for land-grant universities, and wisely, the authors included chapters on the impact of governing bodies, and the role and impact of faculty and of students, each chapter addressing the seven themes from varying perspectives. *Land-Grant Universities for the Future* ends with "Charting the Future of American Public Education," a chapter dedicated to answering the "'so what?' question" (p. 150) and aimed to provide guidance toward "restoring the American citizenry's confidence in its public institutions of higher learning through the establishment and maintenance of more harmonious relationships with community stakeholders" (p. 150). Additionally, the authors advocate for an undergraduate course on understanding the mission of land-grant universities and building leadership and advocates in the 21st century for these institutions. A syllabus for the course is provided as an appendix.

The book's audience reaches beyond presidents and chancellors; it is accessible and pertinent to undergraduate and graduate students, faculty, board members, and state legislators, all who will benefit from the candid discussions about critical issues that affect not only land-grant universities, but all American public higher education in the present century.

CREATING WICKED STUDENTS: DESIGNING COURSES FOR A COMPLEX WORLD
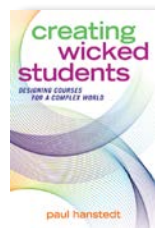
I consider myself an experienced professor, and I put a lot of work and time into designing and redesigning my courses every semester; however, *Creating Wicked Students: Designing Courses for a Complex World* opened my eyes to how I can improve my classes and better prepare my students to be creative, critical, and contributing members of a particular field and of society at large; in other words, how to be "wicked students."

Review of Five Books on Higher Education

In this book review series so far, the progression of texts has moved from general concepts of rethinking higher education, creating new university models, and revisiting historical missions to adjust for modern times, to this current book on designing courses that prepare students for today's expeditiously dynamic world. Through this series of texts, one thing is constant: What we've done in the past does not work today; we must educate students in ways that prepare them to deal with today's "*wicked problems*, that is, situations where the parameters of the problem and the means available for solving them [are] changing constantly" (p. 3). Most educators want students to participate in life in "thoughtful and constructive ways" (p. 4), and Paul Hanstedt provides readers with valuable resources and guidelines for doing just that at the course level. He focuses on giving students authority through "authorship, the ability to write and rewrite, shape, and create" (p. 5). Our courses, he contends, must be training grounds for students to practice authority while they are learning, not delaying the practice for when they graduate. Thus, this book is intended to help instructors design courses that "develop students' capacity to be engaged and deliberate citizens" who "engage in meaningful dialogue with the larger sociopolitical contexts beyond college" (p. 9).

Chapters are scaffolded to address course design issues as a progression: goals, course structure, assignments, exams, pedagogical techniques, and assessment. There are even two stopping points in the book, Intermission chapters, that encourage readers to pause, reflect on previous chapters, the exercises they've worked through, and prepare for the next section. *Creating Wicked Students* is craftily written to allow readers the option to read and work through the chapters and exercises in order or skip around as they see fit.

There are many helpful qualities about this book that bear mentioning, such as the multiple boxed exercises in each chapter with step-by-step instructions to work on new or existing courses all the way from goals to assessment. Resources like Krathwohl's revision of Bloom's taxonomy help to develop course goals that push students to assume authority, and numerous examples that show readers how to take a seemingly good goal, assignment, or exam question, and move it into contexts of uncertainty that allow students to synthesize information and "'make decisions in the

midst of uncertainty'" (p. 66). Hanstedt does a superb job of not locking assignments into certain disciplines; he explains and shows how one assignment in social sciences, for instance, can be modified to fit an English class. By the time readers reach the end of the book that includes six appendices with six different assignments, it is easy to see how those assignments can be revised for almost any course a reader may teach.

Like the Intermission chapters, the conclusion offers a final breath to reflect on *Creating Wicked Students* as a whole, and Hanstedt offers four cautions about course design that are worth considering. I wonder if that advice might be better put up front because the book can be overwhelming if read cold and worked through one chapter at a time. Readers might consider reading the book through one time and then going back and working on the exercises gradually. Both veteran and new teachers—and subsequently their students—will benefit greatly from either a quick or in-depth read of this book.

WHY THEY CAN'T WRITE: KILLING THE FIVE-PARAGRAPH ESSAY AND OTHER NECESSITIES
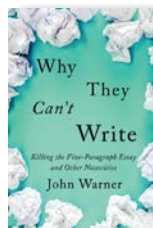
For the last book in this series, I wanted to look at higher education in the classroom. *Why They Can't Write: Killing the Five-Paragraph Essay and Other Necessities* delivers this perspective from both teachers and students.

Part I: Killing the Five-Paragraph Essay is on target with the book's title and provides overarching reasons for why "Johnny Could Never Write." John Warner argued that students are not successful writers after they graduate because they are not taught writing in ways they will experience it outside of the classroom. There is a system-wide emphasis on product, not process—and a whole host of other reasons that make up Part II: The Other Necessities.

It is in this second part where I became disoriented to the book's purpose based on what I thought I was getting into; I thought I was reading about how to teach writing. Part II, however, is about almost everything we are doing wrong in our educational system. When I say "we," though, I mean the mandates and faddish curricula that trickle down to teachers from those on the high court of education, some who are not even educators but businesspeople, many with a product

to sell. At first I kept wondering when Warner was going to get back to writing, but chapter after chapter I was fascinated by the ludicrous twists and turns that national educational standards and policies have taken, many of which often countered research that had been around for years before the latest fad taking hold. I was also shocked to read what goes on in public schools today, such as the use of "ClassDojo, a behavior-tracking app that lets teachers award points or subtract them based on a student's conduct" (p. 46). As Warner pointed out, just how would anyone feel about school when your performance is constantly being monitored and displayed for all to see? It's no wonder that some students proclaim to love learning and hate school as he mentioned several times. Although I didn't catch it immediately, Part II is important to understanding Part III because it describes what students face on a regular basis regarding school atmosphere, how they are under constant surveillance, the stress they face with standardized testing, and the faddish curricula they must weather every few years, including trends associated with technology.

Part III offers exactly what it is titled: "A New Framework." This part of the book rides the waves of the previous section and offers countermeasures to those problematic mandates. By providing thorough explanations and example assignments, Warner shows how to "make writing meaningful and make meaningful writing." Part IV: Unanswered Questions touches on lingering questions, such as how to teach grammar, what to do about grades, how this information applies to younger students, and what kind of support teachers really need.

Why They Can't Write was an inspiring read that should not be limited to teachers; I highly recommend it for administrators, too. There were times in the early part of the book where some examples became extraneous, but the good news is that Warner is a talented writer where I never had to backtrack or read over anything twice to get his point.

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ABOUT THE AUTHOR

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Review of Five Books on Higher Education

TABLE 1. Books on future education compared

	Generous Thinking: A Radical Approach to Saving the University	*The Creative University: Contemporary Responses to the Changing Role of the University*	*Land-Grant Universities for the Future*	*Creating Wicked Students: Designing Courses for a Complex World*	*Why They Can't Write: Killing the Five-Paragraph Essay and Other Necessities*
Audience	University administrators and faculty	Educators in general; university faculty and administrators	Presidents and chancellors of land-grant universities; faculty; students	New and veteran teachers at the university level, although other educators may find the exercises useful	University writing teachers; however, other teachers who use writing assignments would benefit as well; administrators
Major Strengths	Provides talking points and examples of the current crisis in higher education	Offers specific and concrete options for implementing social and creative innovation in curricula	Provides seven main areas of concern for land-grant universities; voices of survey participants are shared and not overridden by the authors	Step-by-step exercises in each chapter help readers apply concepts to their own classes	Easy to read; insightful perspectives; example assignments with full explanations
Major Weaknesses	"Generous Thinking" is not a new concept; not much new information would be gleaned from this book	None found, although the audience is limited, based on the intense academic style	None found	None found	Some examples are long and contain extraneous detail
Comments	A long argument that could be made in less than half the pages	Offers perspectives other than American on issues in higher education, innovation, and creativity	Even if readers disagree with the authors' conclusions, the book can stimulate healthy and focused conversations among administrators, faculty, and students	Reading the book before working on the exercises might be most helpful	Provides information about educational trends that take place in elementary, middle, and high school that affect student performance at the university level
Rating (5-star scale)	*	****	*****	*****	****
Cost (US)	$29.95	$55.00	$34.95	$24.95	$19.95

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STC Live Educational Webinar (free, sponsored, and community webinars excluded)	2
STC Online Courses	6
STC Summit Pre-Conference Courses (full day)	6
STC Summit Pre-Conference Courses (half day)	3
STC Annual Summit	8
Begin and complete a college-accredited course related to the Technical Communication field	8
Published articles that relate to any aspect of *Technical Communication* (2/article)	2
Published books publicly available on topics related to *Technical Communication* (5/book)	5
Presentations at conferences related to aspects of *Technical Communication* (2/presentation)	2
Total needed within 2 years post-certification date	**12**

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